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ABSTRACT

This study constructs and applies an evaluation model to determine if bilingually instructed children in a particular educational program suffer a loss in linguistic, academic, or cognitive growth, and determines whether their self-image and attitudes toward the two salient ethnolinguistic groups are less favorable than those of their monolingually instructed counterparts. A small-scale sociolinguistic survey of the participants and their immediate families was conducted, and a socio-cultural description of the community was made in order to place the program in the greater environment in which the program operated and in which the children functioned and lived. A review of the literature, examination of the community, design of the study, analysis of data, and discussion, summary, and recommendations are included. Several listening tests and other project-related materials are appended. A bibliography and list of tables are included. (Author/RL)

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AN EVALUATION OF SOME COGNITIVE AND AFFECTIVE ASPECTS OF A SPANISH-ENGLISH BILINGUAL EDUCATION PROGRAM

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DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy in Education
in the Graduate School of
The University of New Mexico
Albuquerque, New Mexico

August, 1972

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AN EVALUATION OF SOME COGNITIVE AND AFFECTIVE ASPECTS OF A SPANISH-ENGLISH BILINGUAL EDUCATION PROGRAM

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Rudolph V. Skoczylas, Ph.D.
Department of Curriculum and Instruction
The University of New Mexico, 1972

Statement of the Problem

The purpose of this study was to construct and apply an evaluation model to determine if bilingually instructed children in a particular program have in fact suffered a loss in linguistic, academic, or cognitive growth, and if their self-image and attitudes toward the two salient ethnolinguistic groups were less favorable than those of their monolingually instructed counterparts. A small-scale sociolinguistic survey of the participants and their immediate families was conducted and a socio-cultural description of the community was made in order to place the program in the greater environment in which the program operated and in which the children functioned and lived.

Procedure

Two groups of children were compared on the features known or suspected to affect linguistic and mental development. To further increase comparability of the two groups, an analysis of covariance procedure was applied to statistically adjust each of the criterion variables for initial

differences in age, intelligence, home educational environment, listening and speaking ability in Spanish, and listening and speaking ability in English. The adjusted mean scores were then tested by analysis of variance.

Results

There were no significant differences between the experimental and control groups on measures of oral English skills, Spanish listening comprehension, intellectual functioning, and attendance rates. The experimental group scored significantly higher in Spanish speaking proficiency. The experimental group's ratings of five traits on the concepts Me, Anglo-Americans, and Mexican-Americans were significantly higher than those of the control group; the ratings of the remaining traits were not significantly different. The control group scored significantly higher on the Math test administered in English.

Of the seven predictor variables--the seven themes of the home educational environment index--theme 7, parents' education, showed the highest correlation with four of the six criterion variables. It was also the second best single predictor of the two remaining criterion variables.

Conclusions

1. When compared to monolingually instructed counterparts, the bilingually instructed pupils showed no evidence of either intellectual inferiority or superiority at the

end of two years of bilingual instruction.

2. The bilingually instructed children are learning Spanish and English simultaneously with no apparent difficulty and with an apparent beneficial transfer effect from one language to another.

3. The experimental group's relatively inferior performance on the English Math test suggests that training in Math in Spanish received by most of the children in the experimental group did not transfer when measured in English.

4. The bilingually instructed pupils appear to be developing a positive and democratic attitude toward Anglo- and Mexican-Americans and a self-image that is favorable and not adversely affected by bilingual training.

5. There was no evidence reflected in attendance rates to suggest that the bilingual education program was more demanding than the traditional monolingual program.

6. The best single predictor of academic achievement and cognitive growth was parents' education.

TABLE OF CONTENTS

		Page
LIST OF TABLES		xi
Chapter		
I.	INTRODUCTION	1
	Overview	1
	Need for the Study	3
	Statement of the Problem	5
	Hypotheses	6
	Definition of Terms	7
	Significance of the Study	9
	Description of the Study	11
	Limitations of the Study	12
	Summary of Chapter I and Preview of Remaining Chapters	16
II.	REVIEW OF THE LITERATURE	19
	Rationale for Bilingual Education	19
	Bilingualism and Intelligence	24
	First and Second Language Learning	31
	Measurement of Language Proficiency of Young Bilinguals	39
	Evaluative Studies of Bilingual Education Programs	47
	Measurement of the Attitudes of Bilingually Instructed Pupils	54
	Summary of the Review of Literature	58
III.	THE COMMUNITY	62
	Socio-Cultural Background	62
	A Small-Scale Sociolinguistic Survey	70
	Summary	76
IV.	DESIGN OF THE STUDY	79
	Organization of the Bilingual Educational Program	79

Chapter

Page

Bilingual Staff Selection and Development..... 81
Aims and Approaches..... 82
Population and Sample..... 86
Control and Criterion Variables..... 88
Estimates of Validity and Reliability of the Instruments..... 88
Data Collection Procedures..... 97
Treatment of the Data..... 103
Summary..... 104

V. ANALYSIS OF DATA..... 106

Comparison of Groups.....
Results.....

VI. DISCUSSION, SUMMARY, AND RECOMMENDATIONS.. 126

Discussion..... 126
Summary..... 132
Recommendations..... 134

APPENDICES..... 136

A English Listening Comprehension Test..... 136

B Spanish Listening Comprehension Test..... 139

C Concept Forms: Me, Mexican-Americans, and Anglo-Americans..... 142

D Interview: Home Educational Environment..... 145

E Language Usage Estimate..... 153

F Functional Definition for Identifying Mexican-American Pupils..... 158

BIBLIOGRAPHY..... 159

LIST OF TABLES

Table		Page
1.	Home Language Usage: Listening Speaking by Generation	71
2.	Home Language Usage: Total Scores of Spanish and English	72
3.	Children's Spanish-English Home Language Usage Classified According to Language Dominance	73
4.	Children's Ethnicity	75
5.	Class Comparisons of Intelligence Scores at the Start of First Grade	108
6.	Group Comparisons of Mean Scores on Measures of Age, Intelligence, Components of Home Educational Environment, Spanish Language Skills English Language Skills, and Attendance	109
7.	Means and Adjusted Means for First-Grade Experimental and Control Classes	111
8.	Group Comparisons of Mean Scores of Home Language Usage by Three Generations of Speakers	115
9.	Attitude Toward the Concept "Me"	116
10.	Attitude Toward the Concept "Mexican-Americans"	118
11.	Attitude Toward the Concept "Anglo-Americans"	119
12.	Individual Correlation Coefficients of Seven Themes of the Home Educational Environment Index and the Six Criterion Variables	121

Table | Page

13. Multiple Correlation Coefficients with Six Criterion Variables as Dependent Variables and the Seven Themes of the Home Educational Environment Index as Independent Variables..... 122

CHAPTER I

INTRODUCTION

Overview

The establishment of bilingual education programs in the United States can be seen as the most recent movement in the evolution of school policies designed to assist non-English speaking children. Formerly, non-English speaking children were customarily immersed in a linguistic-cultural environment alien to them. The adverse effects of such well-intentioned but ill-informed education practices upon the children were many. Gaarder (1967, p. 51), referring to the children's experience in elementary school, cited, among others, the following consequences: cognitive retardation, and poor concept of the children's parents, their homes, and of themselves.

The one-language school ignored at least two basic facts related to children who speak other languages. A child began to learn long before he entered school. His education started at birth in the home. He had spent much time mastering his native language and the value and belief systems that attach to it. If the school did not exploit this accumulated learning, it would do itself and the child a disservice. Many educators (UNESCO, 1953, p. 11; Modiano,

1968, p. 43) have agreed that the child's mother tongue is the best medium for learning, especially in the early years.

Another weakness of the one-language school that accepted speakers of other languages was the assumption that the school language could be picked up easily, almost with no special assistance from the school. Challenging this assumption, Spolsky (1971, p. 14) pointed up one of its most damaging results: children failed intelligence tests given in a language they did not know and were labeled mentally retarded. This practice is still considered common.

What may be seen as the next movement to accommodate non-English speaking children in our schools was marked by the advent of TESOL (Teaching English to Speakers of Other Languages) programs. It was reasoned that special English language curriculum materials and a staff trained in second-language pedagogy could provide the children with adequate English language skills and enable them to fit into the regular school program. Ulibarrí (1968, pp. 243-244) contended that TESOL alone does not solve the problem. Those who hoped that TESOL would lessen the problems of academic underachievement and early school dropouts were disappointed. The same problems continued to disturb them. Ulibarrí maintained that other factors--poverty, cultural conflict, social disorganization, and personality disorganization--being less conspicuous, were frequently overlooked in the planning of

educational programs for non-English speaking children. That socio-cultural factors could be combined with development in language and cognition in a bilingual education program encouraged educators to seek amelioration of, if not a solution to, the problem of providing our non-English speaking children with a fulfilling education.

Need for the Study

According to Born and Svobodny (1970, p. 479), in 1969 seventy-six school districts across the country initiated pilot projects in bilingual education. Approximately 25,000 youth were taught factual knowledge and skills in both their native language and English. Refunding of the demonstration projects will provide 25,000 additional children each year with instruction in bilingual education for the next several years. Enrollments in bilingual education may further increase as still other school districts begin similar bilingual education programs.

While many different models of bilingual education programs have been established in various parts of the world, including the one hundred and sixty-three bilingual education programs currently funded under Title VII of the Elementary and Secondary Education Act, only a few have been systematically evaluated or described. Fishman (1970, p. 1) observed that "bilingual education in the United States suffers from . . . a lack of evaluated programs."

In the interest of offering sound educational programs to our children, it is necessary that those responsible for bilingual education programs give accurate descriptions of their programs. Such characterizations and evaluations of bilingual education programs can lead to the improvement of already operational programs and those still in the planning stages.

To adequately describe a bilingual education program requires more than an appraisal of the instructional output. Fishman (1970, p. 11) noted that models of bilingual education "require societal data for their implementation and evaluation." Among the societal factors that appear to be related to bilingual education are (Tucker and d'Angeljan, 1970, p. 6) the parents' language experience, socioeconomic status, and aspirations for their children's educational and occupational future. Home environmental features measured by Lambert, et al. (1970, p. 232) include the general linguistic environment, academic guidance, educational facilities, and home enrichment. In another study, Tucker, et al. (1971, pp. 18-20) reported on the children's self-image and their attitudes toward the two culture groups.

The components of the home educational environment have indicated the educational richness of one of the most important environments in which the young learner functions. Furthermore, this environment, like intelligence (Bloom, 1964, pp. 78, 124) has been assumed to influence academic achievement.

Beyond the home, lies another and larger environment, the community, an area of interaction for the bilingual pupil inasmuch as it contains the dynamics of linguistic and cultural behavior patterns. Mackey (1969, pp. 28, 41) stated that the causes and effects of bilingual schooling were outside the school and that "The home and community contexts in which the language is used must be taken into consideration. . . ." A general anthropological description of the community would provide a wider societal perspective. In summary, the evaluation of bilingual education programs must include the children, the home environment, and the community.

Statement of the Problem

This study attempted to determine if bilingually instructed children in a particular program have in fact suffered a loss in linguistic, academic, or cognitive growth, and if their self-image and attitudes toward the two culture groups were less favorable than those of their monolingually instructed counterparts.

Adults, parents and educators alike, have raised various questions that need to be answered in order to determine and describe the advantages and disadvantages of bilingual education programs. Posed in various ways, the questions could be summarized as follows: How did bilingual education influence the development of the child's

1) mother tongue, 2) second language, 3) cognition or intellect, 4) subject or content mastery, and 5) self-image and attitudes toward the two culture groups? Converted into testable hypotheses, these issues formed the basis of this evaluation effort.

To increase the potential for comparative assessment among similar programs, a general description of the community was made to characterize the role of the Mexican-American in terms of the community's demographic, geographic, educational, cultural, industrial, commercial, dietary and linguistic features. The community description placed the bilingual education program in the greater environment in which the program operated and in which the children functioned and lived.

The evaluation model of a bilingual education program advanced in this study proposed: 1) to characterize the community, the parents of the children, the children, the program, and the children's performance; as a consequence of the above, 2) to generate a field-tested model for application to other similar bilingual education programs; and 3) to draw valid inferences from the results of the evaluation in order to generate other hypotheses.

Hypotheses

Hypothesis One: Bilingually instructed children will achieve equal English language proficiency in listening

and speaking skills when compared to a control group of monolingually instructed counterparts.

Hypothesis Two: Bilingually instructed children will achieve equal Spanish proficiency in listening and speaking skills when compared to a control group of monolingually instructed counterparts.

Hypothesis Three: Bilingually instructed children will achieve equal cognitive growth when compared to a control group of monolingually instructed counterparts.

Hypothesis Four: Bilingually instructed children will achieve mastery in mathematics in English equal to that of a control group of monolingually instructed counterparts.

Hypothesis Five: Bilingually instructed children will not manifest a less favorable attitude toward self or toward either ethnolinguistic group than their monolingually instructed counterparts.

Hypothesis Six: Bilingually instructed children will have attendance rates equal to that of their monolingually instructed counterparts.

Definition of Terms

The following terms carried specific and limited meanings in this study:

1. "Bilingually instructed children" referred to those children who received English and Spanish language

instruction and who also received instruction in the traditional first-grade curriculum, most of which was learned in the child's dominant language.

2. "Monolingually instructed children" referred to those children who received no formal instruction in a second language and who received instruction in a traditional first-grade curriculum in English only.

3. "Intelligence" meant scores on the Coloured Progressive Matrices test by Raven (1962).

4. "Home Educational Environment" meant the ratings of seven sub-themes constituting the Home Educational Environment questionnaire, a focused-interview schedule.

5. "English proficiency" meant the scores on the Dailey Language Facility test for speaking ability, and the English Listening Comprehension Test for listening ability, Skoczylas (1971).

6. "Spanish proficiency" meant the scores on the Dailey Language Facility test for speaking ability, and the Spanish Listening Comprehension Test for listening ability, Skoczylas (1971).

7. "Cognitive growth" meant measured intelligence as determined by the scores on the Raven's Coloured Progressive Matrices test, 1962.

8. "Mastery in mathematics in English" meant the level of achievement indicated by the scores on the Math sub-test of the Cooperative Primary Tests, Educational Testing Service, 1965.

9. "Attitude" meant the ratings on a semantic differential attitude scale, Skoczylas (1971).

10. "Attendance rates" meant the percentage of school days missed as indicated on daily school attendance records.

Significance of the Study

Although there was some evidence to show that no impairment attributable to bilingual education was suffered by children (Lambert, et al. 1970; Tucker, et al. 1970; Richardson, 1968; Malherbe, 1946), the above hypotheses have represented the concerns of adults interested in determining more firmly the outcomes of such schooling. Moreover, the weight of evidence resulting from many evaluations would permit drawing generalizations not yet justifiable, given the limited amount of data available.

The success or failure of a bilingual education program need not be determined solely by the achievement or lack of achievement of specific performance objectives. In addition to this criterion, a direct comparison of bilingually instructed pupils and their traditionally instructed counterparts could be made. Scriven (1967, p. 64) asserted that when we evaluate a curriculum, ". . . as opposed to merely describing its performance, then we inevitably confront the question of its superiority or inferiority to the competition." Suchman (1967, p. 5) placed evaluation

of innovative programs in a larger context and made the case for comparative evaluation even stronger:

> There probably comes a time in the growth of any new field, when, after the initial outburst of enthusiastic activity, a breathing period of evaluation sets in. During this stage, there is likely to be a demand for careful appraisals of old and new programs--research studies designed to test the relative worth of the longstanding, established activities as compared to the new or proposed programs.

Pupils in both the bilingually and monolingually instructed classes spend an equal amount of time learning in school. If the bilingually instructed children are not achieving as much academic growth in a traditional school curriculum as their monolingually instructed peers, educators and parents need to know so that appropriate measures can be taken to modify the program.

If, however, bilingually instructed children achieve, in the same amount of time, as well as their monolingually instructed counterparts in the traditional school curriculum, and simultaneously learn a second language and study subjects in the second language, the theoretical and practical implications can be important for studies in linguistics, psychology, sociology and education.

It must be borne in mind that while an evaluation of the general goals of bilingual education can provide useful information on which to make decisions and judgments, the success or failure of any program reflected in a careful

evaluation must be interpreted against the variables, in kind and in degree, peculiar to each "model" of bilingual education program and to the socio-cultural setting from which they spring. Lambert, et al. (1970, p. 255) cautioned that the results of their study should be generalized only to other children with the same language background, intelligence range, socioeconomic background, and bilingual training.

Description of the Study

This was an evaluative study of first-grade children in a Spanish-English bilingual education program funded under Title VII of the Elementary and Secondary Education Act. The study described the program and its origins and the procedures used to evaluate the end-of-year progress of one class of bilingually instructed pupils and one class of monolingually instructed pupils with similar language background, intelligence range and socioeconomic background. Both classes were measured for bilingual usage in the home-family environment, home educational environment, achievement in comprehending and speaking English, achievement in comprehending and speaking Spanish, achievement in mathematics in English cognitive growth, attitudes of each pupil toward himself and the two culture groups, and daily attendance rates.

Placed in the context of the socio-cultural

background of the community and its inhabitants, this program was evaluated to determine if the bilingually instructed children had experienced cognitive or affective deficits that could be attributed to their bilingual instruction.

Limitations of the Study

This study was limited to two classes of first-grade children, one experimental bilingual class and one traditional monolingual class. It was further restricted to evaluating only the following outcomes of the two classes: first and second language growth, cognitive growth, achievement in mathematics, self-concept, attitudes toward the two culture groups, and rates of attendance. Although there was a need to measure achievement in all subject areas, only achievement in mathematics was evaluated.

The small-scale sociolinguistic survey was limited to the participants in the study and to their immediate relatives. There was a need for a comprehensive and exhaustive community-wide sociolinguistic survey. Such a survey was beyond the pale of this effort. However, a general description of the municipal community in which the experimental and control classes were held was included, but not the immediately adjacent rural areas.

Another limitation was the social class of the program participants. It was anticipated that most, if not all, would fall into the low socioeconomic class, a

consequence of the primary target population as defined by the U.S. Office of Education.

Another possible delimitation was the Hawthorne effect, which might have provided unusual incentive for staff and pupils in the experimental group. It was reasonable to assume that attention from visitors to the program and the novelty of the program itself might have had some influence on staff and pupil motivation.

There was a need to investigate teacher training methods, curricular materials, teaching strategies for culturally different children and for first and second language learning, and staffing patterns. These issues, however, were beyond the scope of this study.

There was also a need for effective instruments in bilingual education. When appropriate standardized measures were not available for the proper conduct of this study, the investigator developed the necessary instruments. The measure and tests employed in this study were:

1. The English Listening Comprehension Test (See Appendix A) consisted of a story narrated on tape, first in its entirety and then in two parts. After each part, five and six questions respectively were asked and the children responded by drawing a circle around Yes or No on an answer sheet. The story and instructions were given in English by a native speaker of English. The total number of questions was eleven.

2. The Spanish Listening Comprehension Test (See Appendix B) followed the same design as the English Listening Comprehension Test, except that the instructions and the story were taped in Spanish by a native Spanish speaker, the children responded to a Sí - No answer sheet, and the total number of questions was ten.

3. The Dailey Language Facility test, a general communicative speaking ability test, consisted of twelve plates and a test administrator's manual. The child is asked to tell a story about or describe each of three pictures. Responses are rated on a 0-9 scale according to exemplified criteria, yielding a total range of scores of 0-27 for an individual pupil. This test was used to measure both Spanish speaking ability and English speaking ability.

4. Intelligence was measured by the Raven (1956) Coloured Progressive Matrices test (Set A, Ab, and B), an untimed, non-verbal test of the capacity for intellectual capacity. The test included a book form of the test, a response sheet, and a guide to administer the test. There were twelve items in each of the three sets, resulting in a maximum raw score of thirty-six.

5. Ability in mathematics in English was measured by the Math sub-test, Form 12A, of the Cooperative Primary Tests (1965). The test included a test booklet, scoring keys, and a handbook. The test yielded a single score based

on the number of questions answered correctly, the maximum being fifty-five.

6. Evaluation of Me, Mexican-Americans and Anglo-Americans (See Appendix C) was made through the use of the semantic differential technique. Pupils rated each of the three concepts separately on eight bipolar scales, each with five points.

7. Home Educational Environment (See Appendix D) was measured by a focused interview based on Lambert's adaptation of the methods developed by Bloom (1964), Dave (1963) and Wolf (1963). The seven themes that constituted this instrument are emphasis on education, quality of linguistic environment, home guidance facilities, environment enrichment, educational facilities, parents' occupations, and parents' educational background. Based on information gathered directly from parents, the first five themes were rated according to the nine-point scales developed by Dave (1963, pp. 153-174); parents' occupations were interpreted by applying Warner's Revised Occupational Rating Scale (1949, pp. 140-141), a seven-point scale which was reversed for use in this study; parents' educational background was classified according to Warner's (1949, p. 154) seven-point Educational Rating Scale.

Other measures used in another part of the study, the small-scale sociolinguistic survey, included:

8. The Skoczylas' Language Usage Estimate (See

Appendix E) assessed language usage in the home domain and yielded a single score that classified the subject, according to a criterion scale, in terms of his dominant-subordinate language usage.

9. Ethnicity was determined by applying a four-criteria functional definition of a Mexican-American (See Appendix F). A subject who satisfied any two of the criteria was considered Mexican-American. Those who did not were classified as Anglo-Americans.

Summary of Chapter I and Preview of Remaining Chapters

The educational and social consequences of the school's response to children whose home language is different from the school language was briefly reviewed. The latest curriculum being proposed by educators for such children is the bilingual education program.

The problem to which this study addressed itself was the rationale and development of an evaluation model that incorporates contemporary linguistic, sociolinguistic, psychological and educational research.

The significance of the study was the application of functionally defined hypotheses to an experimental and control group of first-grade classes to determine some of the cognitive and affective consequences of bilingual instruction upon children participating in a bilingual program supported by Title VII funds.

Chapter II will contain a review of the literature that deals with studies and discussions in the following relevant areas: rationale for bilingual education, bilingualism and intelligence, first and second language learning, evaluative studies of bilingual education programs, measurement of language proficiency of young bilinguals, and measurement of the attitudes of bilingually instructed pupils toward themselves and the salient ethnolinguistic groups.

Chapter III will place the bilingual education program under study in the greater environment in which the program was conducted. The socio-cultural description of the community will include demographic, geographic, educational, cultural, industrial, commercial, dietary and linguistic features. A small-scale sociolinguistic survey will consist of the results of a measure of the language used in the homes, the ethnic identification of the pupils, and a description of the language usage patterns, including language switching, of the pupils's parents.

Chapter IV will comprise the following sections: the organization of the bilingual education program, bilingual staff selection and development, aims and approach of the program, the population and sample, the control and criterion variables, reliability and validity data for the tests and measures, the data collection procedures, and the treatment of the data.

The analysis of data will be given in Chapter V, and

the discussion, summary, and recommendations will be presented in Chapter VI.

The Appendices will consist of facsimiles of the various measures developed for use in the study.

CHAPTER II

REVIEW OF THE LITERATURE

The subject of bilingual education has been discussed from many points of view and the literature is extensive. On neither a theoretical nor an empirical level has there been agreement among the investigators regarding the advantages or disadvantages of bilingual schooling and its relationship to intellectual functioning, academic achievement, and first and second language development. Studies and discussions in the literature relevant to bilingual education and evaluation in the elementary grades have included the following areas: rationale for bilingual education, bilingualism and intelligence, first and second language learning, measurement of language proficiency of young bilinguals, evaluative studies of bilingual education programs, and measurement of the attitudes of bilingually instructed pupils toward themselves and the salient ethnolinguistic groups.

Rationale for Bilingual Education

The question of the role of foreign language instruction in primary education was reflected in two distinct approaches to primary education (Stern, 1969, pp. 26-27). Proponents of the first approach held that primary education was best achieved through the vernacular. They indicated

that an educational foundation in the children's own cultural and linguistic environment preceded the study of a second language which could not begin until children have the intellectual capacities, usually at age twelve or higher, for such study.

Those who advanced the second and more recent approach held that primary education need not be restricted to the vernacular and could be bilingual. The justification for this view was that vernacular education alone did not reflect the linguistic and cultural diversity in the world, a reality that should figure in educational programming. Supporters of this view further argued that monolingually and monoculturally educated adolescents tend to be less receptive to other languages and cultures than primary school children.

Stern (1970, p. 2) observed that the postwar world has rejected the notion that one language might become a world language and has accepted instead the world's linguistic and cultural diversity. This acceptance has resulted in the cultivation and development of native languages throughout the world. He cautioned that unless the various language communities of the world provided second, as well as native, language learning, they would lose contact with the rest of the world.

One illusion that has already been discarded was that each of the world's peoples live in its own monolingual

society. In most areas of the world, the contrary was true: multilingualism, not monolingualism, was the rule. Whatever the purpose of international social intercourse, Stern (1970, p. 3) alleged that it was illusory to maintain that we could restrict ourselves to one linguistic community.

Another illusion persisted and needed to be dispelled. Many have felt themselves to have an international view of the world. Many things foreign--newspapers, books, radio and television broadcasts, etc.--have become readily available. Yet there has been an unwillingness to accept the reality of another language. Stern (1970, p. 3) linked reluctance to accept another language with an education that limited itself to, and overtrained individuals in, one language. The implication for education was that by giving instruction in at least one other language besides the pupil's native language an attitude of acceptance of other languages and cultures could be encouraged.

Although they both implied support for foreign or second language instruction, Carroll (1969, p. 56) and Stern (1969, p. 27) regarded a change in the role of such instruction in the curriculum as needing serious consideration. Such a change would be costly and time-consuming. A matter of interest to educators, parents and other laymen, the role of second language instruction in primary schools had educational, social, political and economic

consequences that would have to be weighed carefully before a change could be effected.

Jones (1969, p. 13) advanced five reasons why informed opinion favored an early introduction to the learning of a second language. The psychological reason was essentially the argument for the optimum age for second language learning. The child could learn a second language in a manner similar to his learning of the first language. Lacking inhibitions, his personality not yet consolidated, the young child spontaneously could indulge himself in language learning. The general character of the child made childhood the best time for learning. The neurological-physiological reason was based on the view that a young brain has greater plasticity and a greater capacity for acquiring speech. The third reason was derived from the observations of teachers and linguists who compared the apparent success of young children learning a second language to the great effort required of adolescents. The political reason was that the pupils of today would have to be prepared to take their place in a world that was becoming increasingly international minded. Finally, sociologically, a young child would accept his school's linguistic milieu without special motivation; later, however, special motivation might have to be cultivated.

Sparkman (1966, pp. 13-18) added still other advantages to beginning second language instruction in the

elementary school. Second language learning would be supportive of achievement in other school subjects, and it would have a positive transfer back to the native language. As the acquisition of language skills and experience within a culture would take time, an early start would allow the child the time needed to reach a high degree of proficiency in language and an empathic participation in a second culture. Sparkman concluded by observing that bilingualism and biculturalism seemed attainable through instruction if begun in the elementary school.

In Andersson's Foreign Languages in the Elementary School, (1969, pp. 10-11), Fishman emphasized a frequently neglected source of linguistic and cultural wealth that could be further developed by educators in this country. He argued that the use and furtherance of the creativity and foreign language knowledge of America's ethnic groups could be advantageous not only to America's international relations, but could also complement America's culture.

Gaarder (1969, p. 33) stated the case for bilingual education for those whose native language was neither a school language nor the dominant language of the society. The bilingual child's conceptual development and acquisition of experiences and information would continue at a normal rate if the child's mother tongue were used as a means of instruction; however, retardation was probable in children whose native language was not used for instruction and whose

competence in English was less than that of monolingual English speaking children. The child's mother tongue should be used by the teaching staff and as a school language in order to cement a strong, mutually reinforcing relationship between the home and the school. Since language was the most important means of self-expression, the school's rejection of the mother tongue of a large group of children adversely affected those children's concept of themselves, their parents, and of their homes. If a bilingual adult were not to achieve reasonable proficiency in his mother tongue, he would be unable to capitalize on his singular potential career advantage--his bilingualism--for a technical or professional career in which language is important. Native competence in foreign languages and the cultures that attach to the languages would constitute a national resource that was needed and must be conserved.

Bilingualism and Intelligence

The relationship between bilingualism and intelligence has been viewed as an important issue and as a complex problem in psychological research for more than half a century. The bilingual situation which has been studied most frequently in the past is that of immigrants to the United States who had some degree of proficiency in their native language and who were acquiring English. Investigators (Altus, 1953; Darcy, 1952; Havinghurst, 1944;

Jamieson & Sandiford, 1920; Kittel, 1959; Pintner, 1933; Pintner & Keller, 1922; Seidl, 1937) who have tried to determine the effects of bilingualism on the measurement of intelligence of elementary school children generally have supported the conclusion that bilinguals have suffered from a language handicap when intelligence was measured by verbal tests.

More recent studies have centered on Spanish-English bilinguals in the southwestern United States, Welsh-English bilinguals in Wales, and other bilinguals in the United States and elsewhere. The reviews of the literature on the effects of bilingualism on intelligence (Arsenian, 1937; Bishop, 1965; Darcy, 1953, 1963; Jensen, 1962) indicated that the findings were contradictory. Jensen (1962, p. 366) gave a comprehensive summary of the findings:

> Much literature emphasizes handicaps to a child's articulation, speech rhythm, and voice quality, his language development, his intellectual and educational advancement, and his emotional stability. Disadvantages to society are also cited.
>
> However, other literature contends that definite advantages in the above categories are to be experienced or that the disadvantages have been exaggerated or are nonexistent.

Arsenian (1937, p. 51) reviewed over thirty studies and noted that the results of the investigations ". . . are not sufficiently in agreement to lead to any definite generalizations regarding the intellectual advantages or disadvantages of bilingualism."

Darcy (1953, pp. 21-57) reviewed a number of

representative studies that reflected an effort of experimental control and grouped them according to the effect that bilingualism had upon the measurement of intelligence. Three groups emerged: those that showed bilingualism had an unfavorable effect upon intelligence; those that showed no significant effect upon intelligence; and those that showed that bilingualism had a favorable effect upon intelligence.

The contradictory findings in the literature, Haugen (1954, p. 81) stated, were ". . . due largely to confusion over the meaning of the words intelligence and bilingualism, as well as the use of testing instruments which make insufficient distinction between various kinds of linguistic behavior." Bilingualism, as defined implicitly or explicitly in the literature, ranged from little control of two languages to native-like control of two languages. Moreover, the degree of bilingualism of the subjects studied was frequently ignored by many investigators. Haugen further observed that most intelligence tests did not measure an individual's innate ability to learn; they were really performance tests that measured skills assumed to be related to the ability to participate successfully in a given culture. An individual whose linguistic and cultural experiences differed from those tested could not be expected to achieve satisfactory results.

Another practice of investigators that made

interpretation of results difficult was the variety of intelligence tests used in the studies: group or individual, timed or untimed, verbal or non-verbal. Darcy (1963, p. 280) pointed out that because the time factor was important in testing bilingual children, more investigators appreciated the advantages of untimed tests. Macnamara (1960, p. 11) assured us that ". . . there is considerable evidence that bilingualism does not affect scores on most non-verbal reasoning tests, so suitable non-verbal IQs can be used to control bias in reasoning ability without masking the effect of bilingualism." In a discussion of the merits of verbal and non-verbal intelligence tests for use with bilinguals (Bishop, 1956, p. 71), the case for the non-verbal test is stated even more fully:

> The performance or nonverbal intelligence tests which measure such cognitive processes as concept formation, reasoning, analogical thinking, with as little dependence as possible on any one language, would seem to be more suitable instruments, for getting at the basic intellectual ability of bilinguals, since the bilingual is free to use whichever language he prefers or, indeed, no language at all.

Darcy (1963, pp. 280-281) verified this argument in her conclusions of a review of the literature. She says that bilinguals did not receive significantly lower scores than comparable monoglots on non-verbal I.Q. tests, especially if the monolingual and bilingual subjects were of the same socioeconomic background.

Because only a few studies have shown a favorable

effect of bilingualism on intelligence, some educators tended to resist bilingual education programs. Their view was that bilingualism would exact a price from the bilingual child in the form of an intellectual deficit. Such a view, stated Diebold (1968, p. 219), was presumably based on the argument that an intellectual deficit resulted from the conflict created by having to deal in two linguistic codes, thus creating an information overload.

This view, according to Kelly (1969, p. 319), was supported by Piaget, the Swiss psychologist. Piaget did not consider early bilingualism, whether gained at school or at home, an advantage; in fact, he argued that it is harmful to the child. He reasoned that since language and concept development were closely associated, conceptualization mediated by two languages was confusing. Diebold rejected this argument because it assumed that bilingualism was the cause of cognitive retardation, whereas all that could be concluded was that an association between the two factors had been observed. Moreover, Diebold argued on an empirical level, those groups of monolinguals and bilinguals that had been compared in various studies had not been equally matched for variables that were known to influence cognitive growth.

Darcy (1963) and Peal and Lambert (1962) demonstrated that the supposed matched monolingual and bilingual groups were not comparable along several extralinguistic dimensions. Diebold (1968, pp. 234-235) stated that:

> Almost without exception, the monolingual groups in these studies (the children who gave significantly higher performances on standardized intelligence tests) were speakers of a sociolinguistically dominant language, dominant in the sense that it enjoyed greater prestige and greater communicative utility in the larger society from which the groups were selected.

Diebold continued that it was equally clear that the bilingual subjects, regardless of their mastery of the dominant language, were additionally handicapped by socioeconomic environmental conditions associated with the lower status bicultural communities in which they grew up; not infrequently pressures of the dominant group manifested themselves in a racism that attached itself to physical, cultural or linguistic differences of the bilingual community. Rudnyckyj (1967, p. 17) implied similar extralinguistic consideration in his statement that:

> Some of the problems raised in connection with bilingualism will prove to be almost entirely problems of biculturalism involving attitudes to the people who speak the language rather than the languages themselves.

In an analysis of the effects of bilingualism, Soffietti (1955, p. 222) also stressed the need to consider extra-linguistic factors, and observed that investigators, although aware of them, have not ". . . realized the necessity of isolating such factors from the basic concept of bilingualism." He asserted that a study of the literature dealing with the effects of bilingualism on the intellectual and social development of children in the light

of cultural considerations revealed that most of the handicaps attributable to bilingualism were due instead to the bicultural aspects of the situation under study. Consequently, an investigator who talked about bilingualism referred not only to two different systems of language habits, but also to distinct patterns of cultural habits. In a summary statement, Diebold (1968, p. 235) stated: "That these sociolinguistic factors can and do profoundly affect cognitive development generally and verbal skills specifically cannot be doubted."

A more inclusive cluster of factors that may help determine under what conditions bilingualism may have an unfavorable or favorable effect on a child's intelletcual, social, or academic development was formed by a working committee of the Northeast Conference on the Teaching of Foreign Languages (Bishop, 1965, pp. 57-101). Those factors that seemed relevant in determining the effects, if any, were the degree of mastery of the two language systems, the socioeconomic status, the learner's I.Q., the relative prestige of the two languages, and the attitudes of the community toward speakers of the two languages. Generally, empirical studies whose findings were against bilingualism were conducted without giving adequate attention to these factors.

In addition to support from a few recent empirical studies, there was theoretical support for the view that

bilingualism had a favorable effect upon intelligence. It was argued (Bishop, 1965, pp. 71-72) that current psychological theory suggested that the realization of an individual's potential intelligence was in some measure dependent upon the nature and extent of the interaction between an individual and his environment. Given this theory, bilingualism could be viewed as enriching the balance between his two languages, and his intellectual potential. The extent of this enrichment would be conditioned by the bilingual's socioeconomic status. Generally the experience of bilingualism provided a child with two ways of viewing and reacting to his environment and with two linguistic codes. If the experiences that a bilingual has had in contrast to those of a monolingual were in fact enriching, they might have affected the bilingual's intellectual development in ". . . concept formation, manipulation of symbols, flexibility, etc., all of which are basic aspects of intellectual functioning."

First and Second Language Learning

How a child acquires language has been an important matter in psycholinguistics. A number of theorists believed that the same principles that apply to learning in general also apply to language learning. Owing much of its appeal to the efforts of B. F. Skinner (1957), this view was usually referred to as the stimulus-response learning theory

approach. Experience shaped the development of overt language behavior, as well as the development of the way language was processed internally, through a process of imitation of the successive approximation to adult language behavior. Environmental factors, such as the immediate family and the socio-cultural group to which the child belongs, provided linguistic stimulus and shaping of the child's responses. These learning theorists placed heavy emphasis on the role of the environment in language development; it was primarily the environment that was active in the acquisition of language rather than the child.

Other researchers, among them, Lenneberg (1967, p. 393) and Chomsky (1965, p. 47), presented a different view of language acquisition, emphasizing the theory of an innate biologically determined mechanism, a language acquisition device. In contrast with the learning theorists, the nativists asserted that the child was an active participant in the process of language acquisition rather than a passive recipient of instruction from the environment. The child's active participation took the form, in part, of testing hypotheses about the structural characteristics of the language being acquired. In the case of second language learning, the theory implied that there would be a decrease with age in the ability to acquire a language by involving the language acquisition device.

Still another view of language acquisition was

expressed by Hebb, Lambert and Tucker (1971, pp. 212-222), who proposed that language learning was an interaction between the child, his heredity and invironment. Generally speaking, interactionists, for example, Bruner (1960, p. 8) and Piaget (1967, pp. 18-22), believed that children have a biological predisposition for language, and view language as both a gradual internalization of linguistic structures and a growing awareness of the social and communicative functions of language. They pointed out that language could not be viewed as either learned or innate, because language was determined by the learner's heredity as well as by his environment.

Almost all children acquire a native language easily and rapidly. Children who move from one language area to another frequently master the second language in a manner that parallels the learning of their native language. Such observations and recent psycholinguistic theories have prompted investigators to re-examine the issue of the relationship between first and second language learning.

Cook (1969, pp. 207-216), Cooper (1970, pp. 313-314), and Bocaz de Arriagada (1970, p. 1) discussed the processes of native language and second or foreign language acquisition; they concluded that there was evidence to suggest that they were essentially analogous. The learner of a first language and the learner of a second language both have to abstract the linguistic rules of the language

and the sociolinguistic rules governing its use. They added, however, that teaching methodologies either ignored the similarities between first and second language learning or neglected to capitalize upon them fully.

Cooper (1970, pp. 312-314) observed that although first and second language learning were analogous, it did not mean that first and second language learners were identical. The second language learner was already equipped with a language which influenced his perception and production of the second. Another cognitive difference was that a second language learner's ability to reason was usually greater than when he was a first language learner, thus enabling him to make inferences about the nature of the second language he was learning.

After discussing the circumstances under which first and second languages were acquired, Stern (1970, pp. 64-65) implied that we should not expect solid guidelines for second language teaching from studies of first language acquisition. He broadened the theoretical scope of the discussion by proposing that a general theory of language acquisition give greater consideration to the problems of second language learning. He contended that the difficulties in teaching and learning a foreign language could contribute as much to a general theory of language learning as studies in first language acquisition.

A first language was acquired by all human beings

almost without exception. A second language, however, was usually not learned efficiently in schools. Stern (1970, p. 6) reported that some students of language questioned that the schools were appropriate for second language learning. Fishman (1966, p. 123), for instance, held that second language learning was ". . . an achievement to which the work of foreign language teachers merely adds embellishment rather than basic components." Chomsky (1971, pp. 151-155) expressed doubt that there could be any application in language teaching of the insights attained in linguistics and psychology. He conceded that "there are certain tendencies and developments within linguistics and psychology that may have some potential impact on the teaching of language." Stern (1970, p. 6) admitted that not all of the problems in foreign language instruction have been solved, but he characterized the extreme view that languages could not be learned in the classroom as unjustified. He observed that classroom instruction exclusively might not be sufficient, but untutored exposure in a community where the second language was spoken, as suggested by Ferguson (1962, p. 6), was not always a reliable and efficient means of achieving proficiency in a second language either.

Speaking of foreign language instruction in the elementary schools, Andersson (1969, p. 191) stated that the movement deserved support because "it recognizes . . . that real proficiency in the use of a foreign language requires

progressive learning over an extended period." While he did not stipulate a definite number of hours or years of study necessary to achieve real proficiency, he advocated that provision be made for elementary pupils to continue their language study through junior and senior high school. In a statement of foreign language policy for elementary schools, The Modern Language Association of America (1961, p. vi) stated that foreign language instruction in the elementary school "is an essential part of the long sequence, ten years or more, needed to approach mastery of a second language in school." Assuming that a long sequence of second or foreign language instruction was necessary to achieve proficiency, were the early school years a good time to begin such instruction?

Penfield and Roberts (1959, pp. 235-240) and Lenneberg (1967, p. 176) suggested that language acquisition was best achieved before puberty, that the human brain lost its plasticity after that age, making language learning increasingly difficult. Penfield (1953, pp. 202-207) wrote that the four language skills--understanding, speaking, reading and writing--were dependent upon the use of specific areas of the cerebrum.

> There is an optimum age when these special areas are plastic and receptive. . . . It is obvious that the little child, learning to speak his mother's tongue, does so without accent and without apparent effort. . . . If, before the age of ten to fourteen, the child associates with those who speak a second or even a third language, he

> can learn by a similar technique two or three languages with no evident increase in his effort.

Lenneberg (1967, p. 176) supported Penfield's findings:

> Most individuals of average intelligence are able to learn a second language after the beginning of their second decade, although the incidence of "language-learning-blocks" rapidly increases after puberty. Also automatic acquisition from mere exposure to a given language seems to disappear after this age, and foreign languages have to be taught and learned through a conscious and labored effort. Foreign accents cannot be overcome easily after puberty.

In spite of the clear inclusion of both first and second language learning in Penfield's and Lenneberg's investigations, Jakobovits (1970, pp. 54-55) alleged that the neurophysiological observations of Penfield and the biological observations of Lenneberg applied only to first language acquisition.

Carroll (1967, pp. 420-421) emphasized the distinct advantage that children have over adults in learning a foreign language. He stated it was significant that children learned a native-like pronunciation with ease, making extensive pronunciation drills and phonetic explanations unnecessary.

Stern (1963, p. 23) reviewed the evidence on the relation between age and foreign language instruction and listed the relative advantages and disadvantages of beginning second or foreign language instruction before adolescence, at adolescence, and at adulthood. His list for pre-adolescent

instruction indicated that the disadvantages were: possible confusion with first language habits; lack of conscious acquisition of the language learning process; and a disproportion between time spent and language gain. The advantages included: instruction at this age was in agreement with the neurophysiology of the brain; it was easiest and most effective; it resulted in natural and good pronunication; it left richer linguistic memory traces for later expansion; and the early beginning allowed a longer time for language development.

Stern (1963, p. 22) regarded the issue of optimum age of second language learning as a pseudoquestion. What matters, stated Stern, was:

> (1) to show that it is socially and educationally desirable. . . . (2) It must be shown that it is sound from the point of view of the development of children, that, in fact, there are no contradictions on psychological grounds for teaching a language at this stage. (3) If, in addition, it can be demonstrated that the learning of languages in the early years has certain special merits this would add further weight.

He added that instead of trying to establish an optimum age for second language learning, an effort should be made to show that the early school years were a good period for beginning second language study. Stern (1963, pp. 26, 65) concluded by cautioning that the introduction of a language had to be considered in terms of the aspirations and social attitudes of the community served by the school district; it was not just a matter of curriculum, method or correct timing.

Tucker and d'Anglejan (1971, p. 177) reported that Lambert, Just and Segalowitz (1970, pp. 229-279) have suggested that educators may have concerned themselves too much and too long with trying to determine the optimum age for second language instruction and the appropriate number of hours of foreign language instruction. They further suggested that educators responsible for bilingual education in bilingual communities should give more attention to the answer of a relevant and answerable question: "How can we make our children bilingual?"

Measurement of Language Proficiency of Young Bilinguals

An important consideration in the assessment of a bilingual education program has been the measurement of the bilingual's facility in both languages. Interest in language proficiency tests for bilingual primary children has been recent in this country, coinciding approximately with the establishment of bilingual education programs.

The availability and adequacy of bilingual proficiency tests was an issue which various investigators have described. Stern (1969, p. 34) decried the ". . . almost complete lack of objective tests of modern language achievement at the primary level. . . ." In the Report of Survey Findings: Assessment of Needs of Bilingual Education Programs (1971, p. 29) it was noted that commercial publishers

and educational agencies have not been able to cope with the evaluation and testing needs of bilingual education programs. Saville and Troike (1970, pp. 59-60) caution that there was a lack of completely appropriate evaluation measures in bilingual education. Nonetheless, they urged that optimal use be made of what is now available and that more effective instruments be designed. While they specified the contents of an ideal language test for bilingual pupils, they concluded that no such test has yet been developed.

The various tests described for measuring the language skills of young bilinguals fell into two classifications: the discrete-point or direct test and the general communicative ability or indirect test. The discrete-point test, had, until recently, been used mainly for testing foreign language skills of native English speaking high school and college students and teachers. This test, according to Lado (1961, pp. 25-29), elicited specific linguistic items that could be marked correct or incorrect. The value of this kind of test was that it indicated to the teacher the specific language items that the child already possessed and those that he did not. The results of such a test might suggest to the teacher the items to be taught.

Critics (Jakobovits, 1970; Spolsky, 1968; Upshur, 1968) of this kind of test suggested that a more rewarding approach to assessing communicative competence might be based on a model that would give an overall assessment of

proficiency, a measure of how well the child communicates. This kind of test was called a test of general communicative ability or indirect test. It, too, has been criticized unfavorably. Mackey (1965, p. 405) asserted that this type of test revealed only what the learner might wish to reveal; he might deliberately avoid sentence structure and vocabulary of which he was unsure. Lado (1961, p. 27) added that a test that did not specifically test language elements was not effective: "It has only the outward appearance of validity."

Of the two kinds of proficiency tests described, the test of general communicative ability appeared to admit of a greater variety and widespread use. The story retelling technique used by Carrow (1957) for estimating language competencies and fluency has also been used and described by Lambert and Macnamara (1969, p. 90) and John and Horner (1971, pp. 154-155). Speaking ability was measured by Dailey's (1968) Language Facility Test, which elicited speech through a series of pictorial representations, such as photographs, paintings, and drawings. Another speaking test was the Stemmler instrument, the Language Cognition Test, in which the subject was requested to describe various objects and to tell a story about a picture. Peterson et al. (1969) devised a series of cartoon strips as a stimulus for speech from young school children. Using a similar technique but a different medium, Taylor (1969)

provided a tape cassette and filmstrip; the subjects were requested to describe each frame of the filmstrip as it appeared.

In a discussion of measures of bilingual proficiency, Macnamara (1969, pp. 80-97) indicated still other examples of tests that measured overall proficiency or general communicative ability. They could be described as rating scales, tests of verbal fluency, flexibility, and dominance. The rating scales took two forms. One was the language background questionnaire, usually derived from the bilingual schedule developed by Hoffman (1934). The subject estimated the degree of usage of each of his languages in the home environment, and also estimated language usage of the members of his immediate family and usage related to church, TV, radio, etc. Answers were usually combined to produce a single rating for the subject. Aresenian (1937, p. 59) estimated the reliability of such ratings on the order of r = .8 or higher.

A second form of rating scale was self-rating of language skills--listening, speaking, reading and writing--in each of the bilingual's languages. The ratings were typically added to yield a single composite rating.

Fluency tests constituted another measure and their characteristic feature appeared to be the speed of response or of production in two languages. The activities of such tests included naming pictures of objects, following instructions given in two languages, writing words with predetermined characteristics, and the reading of passages in two languages.

Macnamara found that speed of reading was a very powerful predictor of all four major linguistic skills and that it proved to be the most valuable of all the measures of general communicative ability that he used in his study.

The third measure identified by Macnamara was the flexibility test which requires "a subject to change linguistic set rapidly within a confined framework." In a richness of vocabulary test, for example, a lexical item was placed in the context of an utterance in each of two languages, and the subject was requested to write as many words or expressions as he could which were synonymous or nearly synonymous with the underlined lexical item in the utterance. The assumption was that bilinguals would be able to generate more synonymous words or expressions in their stronger language. While the results of such tests were encouraging, Macnamara stated that further study was needed to establish how well the test could predict various aspects of bilingual competence.

Another flexibility test was the semantic richness test which consists of a sentence lacking one word. The subject selected one of several words presented to him. The correct word was a common word used in one of its secondary senses.

The third flexibility test was a word detection test in which the subject identified as many words from two languages in an extended nonsense word. A Spanish and

English example would be: SONTANHASNOHE. This test correlated highly with the language background questionnaire: it contributed significantly to the prediction of vocabulary scores and of grammar scores in both speech and writing.

The last bilingual test of general communicative ability identified by Macnamara was the dominance test in which the subject is asked to pronounce or interpret an ambiguous stimulus which could belong to either language. Spanish and English examples would be hotel and colonial, both of which are spelled alike in both languages, but pronounced differently. The language most frequently used by the subject in this test was the dominant one.

Within the realm of measuring general communicative ability, Fishman (1965, p. 228) proposed that bilingualism be quantified by determining the circumstances under which the languages were used and the frequency with which they were used. Mackey (1968, p. 610) made essentially the same point when he stated that bilinguals differ in many ways in which they use their languages: one difference was the environment in which they use them.

Based on his concept of domains of language behavior, Fishman developed the socio-cultural construct, domain, defined as the larger institutional role-context within which language was habitually used, such as family, school, church, and work. Perhaps the most crucial domain for bilingual behavior generally was the family; multilingualism

or bilingualism frequently began in the family and looked to the family for maintenance and encouragement. Kelly (1969, pp. 291-292) confirmed this observation: It was evident that languages existed for purposes other than school use and that language learning could occur in the home or in society at large. The home was usually the first environment in which a child met two or more languages, especially if the parents belonged to two different language groups in a community where two cultures were in contact. If the home environment was the most crucial for bilinguals of all ages, it may reasonably be assumed to be even more crucial for primary grade bilingual children, whose ties with their families were probably at their strongest.

Given the significance of the home or family domain, it was not surprising that investigators (Braunshausen, 1928; Gross, 1951; Mackey, 1962) had refined the specification of the speakers of this domain. Speakers, initially listed only as family members--mother, father, child, domestic, tutor, etc.--were specified as dyads within the family--father to mother, mother to father, grandmother to child, grandfather to child, etc. By specifying dyads instead of family members, family speakers could be recognized as hearers as well as speakers, and their language behavior might reflect role-relationships that were expected or required of certain individuals in their encounters. Moreover, a determination of language usage in the family domain

of primary grade children could provide an estimate of the degree of bilingualism of such children for instructional purposes.

This wide variety of bilingual tests of general communicative ability was in sharp contrast to the paucity of discrete-point tests revealed in the literature. Only one Spanish-English bilingual discrete-point test was described. Cervenka (1967) developed a Spanish-English test based on contrastive analysis. The various subtests measure phonological, semantic and syntactic control in listening and speaking skills. Two other discrete-point tests only partially satisfied bilingual proficiency assessment needs because they measured proficiency in only one language. The Michigan Oral Language Productive Tests (1970) included a test of oral English for native Spanish speakers; it assessed speaking proficiency in several linguistic categories. The Moreno (1970) test, based on specific instructional materials for teaching English as a second language, can be used as a placement test or as an achievement test.

Throughout this discussion of tests for measuring language proficiency of young bilinguals, two approaches to testing underlay the classification of tests as either tests of general communicative ability or as discrete-point tests. One approach was based on the assumption that the way to determine if a person could use a language was to have him use it. This approach required the subject

to demonstrate his ability to listen by listening, to speak by speaking, to read by reading, and to write by writing. If the subject were free to demonstrate his use of language skills independently of specific vocabulary, pronunciation or grammar, he might reveal only what he wished to reveal. The results of such tests reflected what a subject did, not what he could do; tests of this kind measured communicative ability and fluency.

On the other hand, the four language skills might be broken down into their specific constituent elements, each of which is tested separately. This kind of test, the discrete-point test, would tell us how much the subject knew and how much he did not know of each linguistic element tested within each skill.

Each of the two approaches to testing rested on different assumptions regarding language measurement, and each test provided different, and apparently complementary, information about the subject's language facility. It would appear then that both discrete-point tests and tests of general communicative ability were useful in assessing bilingual skills of young children.

Evaluative Studies of Bilingual Education Programs

Various students of bilingual education (Bishop, 1965; John & Horner, 1971; Pacheco, 1971; Tucker & d'Anglejan,

1970; Tucker et al., 1971) have observed that although many different models of bilingual education programs have been established in many parts of the world, only a few have been systematically evaluated or described. Especially conspicuous has been the paucity of longitudinal evaluations.

In the United States, bilingual education programs are still in the early years of their development, and there has been little evaluative information available. Some bilingual programs, however, have been operating for several years in various countries and have reported on the cognitive or affective results of instruction in the native language in comparison to instruction in a second language. Evaluative studies of these programs will be described.

In a study of 18,773 primary and high school pupils, Malherbe (1946) investigated the degree of bilingualism attained by using an elaborate series of language tests in English and in Afrikaans. He measured the pupils' range of vocabulary, speed of reading and comprehension, composition and power of expression, and spelling. Also studied were factors which influence language growth, namely, availability of books and radio, economic status, attitude toward the other language group, and academic achievement of pupils in unilingual and in bilingual schools. He also studied the influence of the medium of instruction on school progress and general mental development. Findings (Malherbe, 1946, p. 62) reveal:

> . . . a clear advantage in favour of the bilingual school as regards the language attainment in both English and Afrikaans at all intelligence levels . . . and the gains though seemingly small are all statistically significant.

A comparison of bilingually schooled pupils and unilingually schooled pupils in attainment in content subjects, using two representative subjects, arithmetic and geography, indicated (Malherbe, 1946, p. 73) that "In geography the pupils in the bilingual school were, on an average, about four-fifths of a school year ahead of those in the unilingual school. In arithmetic they were half a year ahead." In addition, Malherbe (1946, p. 67) observed that ". . . bilingual children reach a higher all-round level of scholastic achievement than unilingual children."

Another question considered in the Malherbe study was the pupils' attitudes toward the second language and the speakers of it. The findings (Malherbe, 1946, pp. 84-85) showed that:

> Adverse sectional discrimination is from three to four times as great in unilingual as in the bilingual school. The children with bilingual home environment display the least adverse discrimination.

The author concluded that there was no doubt that pupils who mix and associate freely in the bilingual medium schools displayed a relatively low degree of intercultural antagonism. He also concluded that the findings of this study clearly showed the advantages of the bilingual school over the unilingual school.

In another study, Richardson (1968) compared the relative performance in language arts and arithmetic of native English and Spanish-speaking pupils in a bilingual program and the performance of native English and Spanish-speaking pupils in a conventional program in Dade County, Florida. She also assessed the ability of the bilingually taught pupils to cope with academic content taught in the second language. The bilingually instructed pupils received instruction in one language for one half of the day and in the other language for the other half of the day. Native English-speaking teachers taught the English curriculum and native Spanish-speaking teachers taught the Spanish curriculum. When the pupils achieved sufficient control of their second language, concepts were taught in the native language of the teacher irrespective of the native language of the pupils.

Almost four hundred pupils in bilingual or monolingual classes, ranging from first grade to fifth grade, were included in the study. The evaluation data, which covered a three-year period, indicate that children learn equally well in either language and that the bilingual curriculum was as effective as the standard curriculum in academic subjects. Richardson (1968, p. 63) concluded:

> The bilingual program of study was relatively as effective for both English and Spanish speaking subjects as the regular curriculum in achieving progress in the language arts and in arithmetic. In other words the experimental subjects were not

handicapped in academic achievement in English by studying and learning through a second language for approximately half of each day.

It must be noted here, that in addition to performing as well as the control group in the regular curriculum, the English-speaking pupils were learning a second language and the Spanish-speaking pupils were learning to read and write their native language.

This bilingual education program was abundantly funded, its participants were middle-class, and national attention was directed to the plight of the Cuban refugees for whom, in part, the program was established. It would be of value to investigators of bilingualism and bilingual education to know if similar results could be obtained in the absence of these three features.

A study of an alternate days approach to bilingual education, similar to the approach used in South Africa and described by Malherbe, was made by Tucker et al. (1970) in the Philippines. Covering only the school year 1968-1969, the study assessed the language skills and content mastery of bilingually instructed pupils with those of monolingually instructed controls. Four classes of first grade pupils participated in the study: one class followed a standard Pilipino curriculum, one followed a standard English curriculum, one followed an alternate days Pilipino-English bilingual curriculum, and the last class, which was the only one without children who had attended kindergarten, also followed an alternate days Pilipino-English bilingual curriculum. The curriculum for all classes was similar in

order to isolate the effect of the language instruction. Pretesting at the beginning of the school year included measures of non-verbal intelligence, science and picture vocabulary in both languages, and language aptitude tests. The end-of-year evaluation included an assessment in English and Pilipino of science, non-verbal social studies, verbal social studies, and mathematics.

Tucker et al. (1970, p. 292) concluded that the results of testing and the observations by teachers and visitors indicated, in part, that

> . . . the alternate days bilingual approach to education does not result in confusion or retardation. Rather, the bilingually instructed pupils at the end of one year appear to be developing language and content skills comparable to their control counterparts.

Evaluative studies of bilingual education made by Lambert et al. (1970) and Tucker et al. (1971) of the St. Lambert program in Montreal offered perhaps the most thorough experimental investigation of bilingual education today. Begun in 1966, this French-English bilingual education program incorporated a home-school language switch in kindergarten and first grade. English-speaking children pursued classroom instruction principally in French. The most recent evaluative study of the program made by Tucker et al. (1971) investigated the intellectual and attitudinal consequences in several areas: English and French language skills, arithmetic skills, intelligence and creativity,

sensitivity to foreign sounds, and attitudes toward relevant ethnolinguistic groups and self. Control classes consisted of monolingually instructed French and English children of the same intellectual capacity and social class.

The evaluators (Tucker et al., 1971, pp. 47-48) concluded that children who completed five years of instruction in the program--kindergarten through fourth grade--experienced no native language or subject matter deficit; and there were no indications of cognitive retardation attributable to the bilingual program. Additionally, the bilingually instructed children demonstrated a firmer grasp of French language skills than children who studied French as a second language. The results of the attitudinal measures, however, were not as satisfactory as those of the other areas measured. The bilingually instructed children's attitude toward French-Canadians was not more favorable than that of the children in the English control group. Given this result, it might be hypothesized that in addition to learning a language or learning in a language some experience was needed to bring about a fundamental and favorable change in attitude toward another ethnolinguistic group.

A contrast of this program with bilingual education programs in the United States might result in the following distinguishing characteristics: the children in the St. Lambert program had no feeling of inferiority in school; their teachers did not have low academic expectations for

them; their socioeconomic status gave them discernible power in the community; their native language, the dominant language, was widely respected; and they were not expected to compete with French native speakers in the bilingual classroom.

Measurement of Attitudes of Bilingually Instructed Pupils

It seemed reasonable to assume that children came to school with certain prejudices. In an international study involving boys and girls of three different age groups--six-, ten-, and fourteen-year-olds--from eleven different countries, Lambert and Klineberg (1967, p. 3) investigated "the origin and development of national stereotypes in the minds of children." They reported that the six-year-olds generally learn about others through parents, mainly, or through television and movies. This same age group revealed an almost universal tendency to view the world's peoples as being different from rather than similar to their own ethnic group. The investigators related this tendency to the normal intellectual development of children, namely, that children learned to differentiate among experiences in the environments before they comprhended the similarities. Lambert (1967, p. 106) added that:

> . . . rigid and stereotyped thinking about in-groups and out-groups, or about own groups in contrast to foreigners, starts during the pre-school period when children are trying to form a conception of themselves and their place in the world.

Allport's (1954) account of the development of prejudice focused on a national setting, where children had experiences with distinctive ethnic and religious subgroups to generalize from and where they faced the problem of understanding local subgroups at about the same time they began to learn who they themselves were. He contended that by the time a child was six years old he had passed through the initial stage of curiosity and interest in racial and ethnic differences and was aware of group differences, though he might not grasp all the relevant characteristics. Allport (1954, p. 307) noted that during this period of development of pregeneralized learning, the child learned linguistic tags that represented generalizations that mature adults accepted.

The development of children's attitudes toward themselves and other groups began in the pre-school years and was strongly influenced by his family. A matter of significance in a study of bilingual schooling was the influence of such schooling on the pupil's self-image and on his attitudes toward the two culture groups. Did bilingual schooling, in contrast with monolingual schooling, serve to break down the prejudices a child brought to school, did it intensify them, or did it have no appreciable effect on them? This question became especially important because it was generally acknowledged (Malherbe, 1946; Tucker et al., 1971) that a goal of bilingualism, formally or informally

achieved, was the social integration or social harmony that results from a knowledge of two languages and two cultures. That social integration or fusion of a community or a nation was to be achieved at all by any particular means was a matter of argument and opinion, depending on one's social and political views of a country's future. It was not the purpose here to present arguments for or against social integration. Rather, it was to determine what, if any, effect instruction in two languages and two cultures has upon pupils' attitudes.

There was some evidence that a bilingual-bicultural environment had a favorable effect on children's attitudes. The findings of Peal and Lambert (1962, pp. 12-13) indicated a clear pattern that bilingual children had markedly more favorable attitudes toward the other language community in contrast to the monolingual children. Walsh (1969, p. 298) observed that the "products of . . . bilingual education prove to be brighter, more tolerant, and more receptive about their own and the other culture than are otherwise comparable monolingual children. Lambert (1967, p. 106) noted, in part, that:

> the child brought up bilingually and biculturally will be less likely to have good versus bad contrasts impressed on him when he starts wondering about himself, his own group and others.

While it may be clear that young children had attitudes to be measured and that measuring the effect of

bilingual education upon such attitudes was important, it was generally recognized (Andersson, 1969, p. 147; Pacheco, 1971, p. 115) that evaluating the quality and extent of attitude change was particularly difficult. Andersson and Boyer (1970, p. 123) characterized evaluation of affective learning as being perhaps even more important than cognitive learning since successful cognitive development depended largely on children's motivation and attitude. They added that it was particularly important to observe and appraise the children's cross-cultural behavior, in spite of a need for much development in evaluating attitude learning and change by objective measurement.

In a brief discussion of instruments to measure attitude toward language study and ethnic groups, Jackobovits (1970, p. 126) says, "We know enough from the surveys used in previous studies to prepare questionnaires designed to assess the learner's attitudes. . . ." He concluded that the semantic differential technique was an appropriate measure of attitude.

Developed largely by C. E. Osgood and his associates (Miron & Osgood, 1966; Osgood, 1952; Osgood et al., 1957), the semantic differential technique was based on the central theme that man, as a user of language, revealed a great deal about himself through his language. Anastasi (1968, p. 535) maintained that the concepts to be rated, while using this technique, could be chosen to fit whatever problem was being

investigated. For example, the respondent could be asked to rate, among other concepts, himself, and members of different ethnic or cultural groups. Kerlinger (1964, p. 569) noted that an investigator might often need only the scales of one factor, most likely the evaluative factor in a study of attitudes and values. He also agreed (1964, p. 579) that the technique showed promise in studies of cross-cultural communication problems.

> Concepts are essential parts of the learning of attitudes. The relatively rigid and standardized perceptions of minority group members, called stereotypes, are important parts of prejudiced attitudes. Is it possible to change stereotypes? Attitude learning and change studies might well have a sensitive and helpful companion in the semantic differential.

With reference to the number of scales to be used, Kerlinger suggested that with children, a five-point scale would probably be more suitable than a seven- or nine-point scale.

In summary, it appeared that the semantic differential technique, designed for use with younger children, was an appropriate measure of attitude learning and change toward self and members of different cultural groups.

Summary of the Review of Literature

Proponents of monolingual primary education argued that such education should be maintained until children have established a foundation in their own cultural and linguistic environments and until they have the intellectual

capacity for studying a second language. Supporters of bilingual education argued for a number of different reasons--psychological, educational, sociological, linguistic, economic and political--that bilingual education can begin on the primary level.

Research findings that described the effects of bilingualism on intellectual functioning were contradictory. The majority of investigators concluded that bilingualism had a detrimental effect on intelligence; others found little or no relation between bilingualism and intelligence. Only a few studies produced evidence suggesting that bilingualism might have favorable intellectual consequences. Psychological theory also existed to support either of two contradictory views of the effects of bilingualism upon intelligence. One theory held that bilingualism and biculturalism might confuse an individual. The other held that they might enrich him. Of the variety of I.Q. tests available for use with bilinguals, the individually administered, untimed, non-verbal test seemed appropriate. The following factors appeared to be relevant in measuring the effects of bilingualism on intelligence: the degree of bilingualism, socioeconomic status, I.Q., the relative prestige of the languages, and the attitudes of the community toward the speakers of the languages.

How a child learned his native language was a central, and apparently unsettled, question in psycholinguistics. One theory of language acquisition stressed the environment;

another stressed the child and his innate language acquisition system; still another stressed the interaction between the language learner on the one hand, and his heredity and environment on the other. First and second language acquisition were essentially analogous, despite cognitive and maturational differences in the learners themselves. The similarities found in first and second language learning were not fully exploited by language teaching methodologies.

The wide variation in the extent of the bilingual pupil's command of languages, was, in part, accounted for by his degree of proficiency in the four skills--comprehension, speaking, reading, writing--of language as measured by a discrete-point test or a test of general communicative ability. Another consideration was the situation in which the languages were used and with whom they were used.

There appeared to be a growing conviction that bilingualism was not harmful to the intellectual, emotional and academic development of young learners. Some forms of bilingual education programs enabled pupils to reach standards of education that compared favorably with the attainments of their monolingually instructed peers; also, bilingually instructed pupils received simultaneously an extended experience in learning and using a second language.

Ethnic distinctions for both minority and majority group members appeared to develop very early in life. While stereotypes of young children are general ones, they changed

with increasing age, becoming more specific and more similar to those held by adults. The semantic differential technique was an appropriate measure for attitude learning and change that might result from bilingual instruction.

CHAPTER III

THE COMMUNITY

The causes and effects of bilingual education programs lie outside the school, and two environments that influence and are influenced by bilingual schooling are the home and the community. Mackey (1969, pp. 28, 41) reasons that the home and community contexts in which the languages are used must be taken into consideration if the languages are to be used in school, for "it is on the assumption of usage and consequent knowledge that the bilingual instruction is based." The following description aims to provide a greater societal perspective of the bilingual program by relating it to the socio-cultural qualities of the community and to the patterns of language usage in the home and in the community.

Socio-Cultural Background

The community is in Santa Clara County in Northern California. It has a total population of 13,200 according to the latest census made in July, 1971 by the California State Department of Finance. Of this number 34% are Mexican-American, most of whom live in the southern and eastern

quadrants of the city, the same quadrants in which the two schools in this study are located.

It is a predominantly agricultural community: its manufacturing and trade are also related to agriculture, i.e., wineries, canneries and farm equipment sales. It is, however, becoming a suburban bedroom community of larger cities in the northern reaches of Santa Clara County.

Santa Clara County occupies the major portion of the Santa Clara Valley. The valley begins 32 miles south of San Francisco and extends 60 miles in a north-south direction, with an average width of 20 miles. The renowned San Francisco Bay extends for several miles into the northern end of the valley. The county has an area of 1,305 square miles, or 835,000 acres. With approximately 80,000 acres under cultivation, a diversity of crops is produced: fruits, nuts, vegetables, grapes, berries, hay, grain, and nursery stock. Over 4,000 miles of highways and roads are maintained by the county, state and local communities. More than half have been paved. State paved highways, interstate highways, railroads, bus routes, truck lines and air service connect all parts of the Pacific Coast and the leading cities of the United States with San Jose and Santa Clara County.

The school district in the community serves a student population of more than 5,200 students from kindergarten through grade twelve in six elementary schools, one intermediate school, and one high school. Fifty-four per

cent of the total enrollment is Mexican-American. Of the Mexican-American students enrolled in the schools, over 40% come from families with annual incomes of less than $3,000. Twenty-one per cent of the Mexican-American students are from families that receive assistance under the Aid for Dependent Children program. Terminal school data demonstrate that the dropout rate of Mexican-American students is substantial: 69.7% of those who do not complete twelve years of education are Mexican-American.

An assessment of student performance levels clearly shows that Mexican-American students have a higher incidence of educational handicap. Such students are enrolled more frequently than their Anglo-American peers in special programs of speech therapy, development of English oral skills, and remedial reading classes.

In the high school graduating class of 1970, there were 79 Mexican-Americans and 171 Anglo-Americans and others. Of the 142 who planned to attend college, 46 were Mexican-Americans. Of the 8 who planned to enter the military forces, only 1 was Mexican-American. Of the 36 who entered the work force (occupation unspecified), 23 were Mexican-American. Of the 5 who entered trade schools, none was Mexican-American.

School personnel consisting of the board of trustees, administrators, credentialed teaching staff, and classified employees (aides, clerks, secretaries, etc.) total 396, of which 62 or 15.7% are Mexican-American.

The city government consists of 6 councilmen, one of whom is Mexican-American, and one mayor. There are approximately 70 city employees, of whom about 15% are Mexican-American.

The fire department has a total of 11 paid employees, none of whom is Mexican-American. Of the 25 men on the volunteer force, one is Mexican-American. Although many emergency calls are received from Spanish-speaking persons, attempts to recruit Mexican-Americans as full-time employees or volunteers have been unsuccessful.

The city police office employs 20 sworn officers and 5 clerks and cadets. Of the sworn officers, 2 are Mexican-American and a total of 6 staff members speak Spanish.

The highway patrol that serves the city has 3 officers; none is Mexican-American. One staff member is bilingual, however, and 3 others speak a "little" Spanish.

Of the several churches in the community, four--one with a large congregation (2,700 families) and three with small congregations (100 or less families)--offer principal church services in Spanish. None of the remaining several church groups offers any services, principal or auxiliary, in Spanish. The Roman Catholic Church in the community offers several auxiliary religious, social, counselling and guidance, and charitable services conducted in Spanish. It also employs a full-time bilingual Mexican-American staff member.

Four public institutions offer adult education services: Mt. Madonna Continuation School for high school dropouts, Trabajadores Adelante, Inc., Gilroy High School Adult Night School, and Gavilan College Night School.

Cultural facilities include the public library and local college, where a forum program of nationally known speakers and musical groups is offered. The college also makes special Mexican-American presentations. The Mexican holiday, Cinco de Mayo, is celebrated during the week of May 5th. A Mariachi band, speakers, Latin-American films, folk dances, student skits and a concluding dance with a Mexican orchestra are some of the features of this celebration. Within 20 miles of the community, the San Jose Civic Auditorium hosts many programs and is a major stop for nationally prominent artists. The San Jose Municipal Chorus, the Light Opera Association, and the San Jose Symphony offer outstanding programs throughout the year. Several junior symphony groups are active in Santa Clara County.

A tri-weekly newspaper carries local news and has a circulation of approximately 3,500. It is printed in English only. An experimental column "La lengua interesante" was published for a short time, but was discontinued because there was no clear and favorable reaction to it. No figures are available to indicate the number of Mexican-American readers. A smaller Spanish tabloid, El sol, is published in a nearby town and is available locally.

Radio KAZA, with transmitters in a nearby town, broadcasts in Spanish from sunup to sundown, except for one hour daily in Portuguese. This station carries local and national advertisements. Although no firm figures of regular listeners are available, it is estimated that 40% of the listening audience is Mexican-American. Another indication of the size of the listening audience can be inferred from the attendance of a KAZA-sponsored picnic; 5,000 adults attended. Another radio station that provides Spanish evening broadcasts is KOMY in a town some 20 miles from the community. KMPG in Hollister also offers a small amount of Spanish programming.

One television station in San Jose schedules a diversity of Spanish programs throughout most of the day. Its programming includes Mexican films, music and comedy originating in Miami, Florida, and Mexican-American talent from the San Jose area.

Two movie theaters show Spanish language films, mainly Mexican, on a regular basis.

Apart from the one college library and the many public school libraries, there is one public city library that also provides access to wider county holdings. Of the 7 staff members, 3 are bilingual Mexican-Americans. The total number of volumes in the city library is 21,172, of which 13,340 are adult books and 7,834 are juvenile books. The total number of books in Spanish is 568, of which 315

are adult and 253 are juvenile. Total periodical holdings is 131, of which 6 are Spanish. The number of books available through the county library is 709,657, of which 1,781 are estimated to be in Spanish, with 1,324 adult titles and 457 juvenile titles. There are 906 multilingual periodicals available through the county library, including, but not exclusive to, Spanish. Of the 20 newspapers at the county library, none is in Spanish.

There are three banks and one savings and loan institution in the community. Only one bank has Mexican-American clerks, who represent 20% of the total number of clerks in the bank. The other two banks neither have Mexican-American employees nor any employee who can communicate in Spanish. The executives of each institution expressed a need for Spanish speaking personnel and lamented their inability to attract qualified bilingual personnel. Accounts held by Mexican-Americans (identified by surname only) in one bank represent 40% of the total; in another bank, 14% of the total; in the third bank, 25% of the total; in the savings and loan, 33% of the total.

A large food market employs 8 supervisors and about 88 clerks. Three supervisors and 36 clerks are Mexican-American. Of the total store personnel, 60% speak Spanish. The manager estimates that 55 to 60% of his customers are Mexican-American. The store stocks large quantities of food used primarily by the Spanish speaking community: bulk flour,

beans, fresh chili, fresh cactus, fresh tripe, gallon cans of hominy, bag spices, pork lard.

One men's shop has a staff of 5, of whom 1 is Mexican-American. Approximately 20 to 30% of the customers are Mexican-American. The volume of business in this shop rises during the summer months because of the large influx of Mexican-American migrant workers.

One ladies' dress shop has a staff of 2 Mexican-Americans. At least 30% of the sales are made to Mexican-Americans.

Interviews with shoppers in the downtown area show that younger Mexican-Americans prefer to eat "American" foods. However, most Mexican-Americans continue to eat the basic diet of "Mexican" food: rice, a variety of beans, various "wild" greens, potatoes, steak, hamburger meat, pot roast, bacon, sausage, tortillas (both flour and corn), eggs, chili, mole, and cactus. Most Mexican-Americans also purchase their foodstuffs at stores that cater to their specialized tastes. At least two such stores extend credit to their customers.

While there are still signs and directions written in Spanish in some parts of the community, there are less of both since the bracero program was discontinued. One hears many people speak Spanish on the downtown streets and in the stores. However, younger Mexican-Americans overheard in the streets seem to use more English of the

non-standard variety in public, although Spanish may be the dominant language of the home.

A Small-Scale Sociolinguistic Survey

The survey included a measure of the English-Spanish language usage of family members specified as dyads in the home-family domain of the children in the first-grade experimental and control groups. The Language Usage Estimate (See Appendix E) elicited from a child's parents the relative amounts of Spanish and English used in everyday conversations at home. The language usage configuration shown in Table 1 shows a trend: the older the generation, the greater the relative amount of Spanish usage; the younger the generation, the greater the relative amount of English usage. Each of the three generations in the experimental group showed a higher average usage of Spanish and a lower average usage of English in the home-family domain than did the three generations in the control group. This pattern of progressively decreasing use of Spanish, the subordinate language of the community, ranging from highest use by the oldest generation to lowest use by the youngest generation, confirmed the analysis of language maintenance in the United States made by Fishman (1966, pp. 395-396).

Since language usage in the home domain was measured at the beginning of the first-grade school year when

TABLE 1

HOME LANGUAGE USAGE: LISTENING-SPEAKING
BY GENERATION

	Experimental Group (n-25)		Control Group (n-22)	
	Spanish	English	Spanish	English
Generation I (Includes: sister, brother, cousins, and friends.)	53 mean=2.12	111 (2.09)* mean=4.44	29 mean=1.32	103 (3.55) mean=4.68
Generation II (Includes: Mother, father uncles, and aunts.)	106 (1.02) mean=4.24	104 mean=4.16	75 mean=3.41	116 (1.54) mean=5.27
Generation III (Includes: Grandmothers, and grand-fathers.)	53 (1.77) mean=2.12	30 mean=1.20	34 mean=1.55	39 (1.14) mean=1.77
TOTALS:	212 mean=8.48	245 (1.15) mean=980	138 mean=6.27	258 (1.87) mean=11.73

*Figures in parenthesis represent how many times one language is used over the other language within each generation and within each group.

the children in the experimental class had only one year of bilingual kindergarten instruction, it is not certain that the greater usage of Spanish in their homes can be considered an effect of their bilingual instruction. It may be that many of the children who received bilingual instruction were volunteered by parents who already maintained and promoted a high degree of Spanish language communications in the home.

Average total language usage scores in the home-family domain of the children, like the scores of the dyads representing the three generations, show a higher use of Spanish and a lower use of English in the homes of the children in the experimental group. The results are presented in Table 2.

TABLE 2

HOME LANGUAGE USAGE: TOTAL SCORES OF SPANISH AND ENGLISH

	Experimental Group (n-25)	Control Group (n-22)
Spanish Usage	491	386
	mean - 19.64	mean - 17.55
English Usage	448	586
	mean - 17.92	mean - 26.63

When the total raw scores of Spanish and English usage for each dhild were converted into dominant language classifications (See Table 3), the control group showed a higher English usage at home (63-64%) than the experimental group (44%). Spanish home usage, however, is higher for the experimental group (56%) than for the comparison group (36-37%). The five classifications of language dominance were used to guide the instructional staff in degermining which children would receive native language instruction in Spanish or in English and which children would receive instruction in Spanish as a Second Language or English as a Second Language.

TABLE 3

CHILDREN'S SPANISH-ENGLISH HOME LANGUAGE USAGE
CLASSIFIED ACCORDING TO LANGUAGE DOMINANCE

Classification	Experimental Group n=25		Control Group n=22	
English Monolinguals	6	(24%	6	(41%)
English Dominants	3	(12%)	2	(9%)
Equivalent Bilinguals	4	(16%)	6	(27%)
Spanish Dominants	9	(36%)	1	(5%)
Spanish Monolinguals	3	(12%)	4	(18%)
Totals	25	(100%)	22	(100%)

Ethnicity of the children in both groups was determined by a functional definition of a Mexican-American child. The definition was agreed upon and used by experienced bilingual instructional staff to distinguish Mexican-American from Anglo-American children in both groups. If a child satisfied the criteria of the definition, he was classified a Mexican-American, If he did not, he was classified an Anglo-American. No other ethnic groups were represented in either first-grade class. The definition is not intended to be exhaustive; other identifying characteristics probably exist. The criteria were selected because they appeared to be salient to the bilingual instructional staff and because they constituted a brief but operational index. If the instructional staff observed that a student satisfied two or more of the below criteria, he was classified a Mexican-American for the purposes of this study: 1) The pupil used Spanish as a native language; 2) The pupil's English speech is clearly Hispanicized; 3) The pupil's physical appearance suggests that he is of Mexican ancestry; 4) The pupil's patterns of behavior are generally associated with Mexican or Mexican-American culture. The results of the application of ethnicity index are shown in Table 4.

From observations made while interviewing parents in their homes, speaking with parents in school or listening to their conversations under diverse circumstances in the

community, language usage patterns have been identified. The categories of usage and the number of parents who fall into each category were confirmed by six adult bilinguals who are life-long members of the community and who have had extensive educational experience and training in language.

TABLE 4

CHILDREN'S ETHNICITY

	Experimental Group (n-25)	Control Group (n-22)
Number of Anglo-Americans	5	7
Number of Mexican-Americans	20	15

Approximately 28% of the parents observed speak Spanish only. Spanish is the dominent language of 24%, but the use of Spanish shows a strong English influence. English is the dominant language of 20%, but the use of English shows a strong Spanish influence. Those parents whose English and Spanish usage are about equal represent 12% of the total. Only 16% of the total represents those parents who speak English only. This configuration of parental language usage is based on the language usage of only the parents of the children in the first grade experimental and control classes. And, while it is not a microcosmic representation of the

language usage of the entire community, it does reflect the language usage patterns of the inhabitants in the area of the community where this study was conducted.

Switching from one language to another in informal conversations was also observed. It is estimated that more than 50% of the bilingual adults alternate constantly from one language to another. They appear to be quite unaware that they are switching back and forth as though they were accustomed to having bilingual speakers before them and know that whichever language they use they will be understood. The occasions on which the bilingual adults seem to be aware of switching are when they talk to an apparent English monolingual, when they try to speak elegantly in a formal situation, or when attention is drawn to their manner of speech. Patterns of code switching noticeable in the bilingual parents of the children in the experimental and comparison classes may also apply to the language behavior of the bilinguals in the general community.

Summary

If the notion of ethnic population parity were applied to the socio-cultural data of the community, it would be apparent that there is not a proportionate representation of Mexican-American employees in the various government agencies in the community: the school system, the city hall, the fire department, the city police, and

the highway patrol. In private commerce and industry, too, the number of Mexican-American employees falls short of the 34%, which represents the number of Mexican-Americans in the total community.

Of the various church bodies, one offers full services, principal and auxiliary, to its Spanish speaking Mexican-American congregation. Three other churches offer principal religious services in Spanish on a regular and sustained basis.

The communication media--newspapers, radio and TV--generally provide good service to the Spanish speaking members of the community, although the local newspaper coverage of events concerning Mexican-Americans is in English. The percentage of school and community library holdings in Spanish, however, fall short of the 34% of potential Spanish readers.

The small-scale sociolinguisitc survey, directed principally toward the parents of the experimental and comparison first-grade classes, yielded several findings. Spanish usage in the home domain of the experimental group decreased progressively from the third generation to the first generation. Conversely, English usage in the home domain increased progressively from the first generation to the third generation. No evidence was advanced to relate the higher Spanish usage in the homes of the bilingually instructed pupils to their one year of bilingual kindergarten instruction.

Ethnic classification of the children revealed a disproportionate representation of Anglo-Americans and Mexican-Americans in the experimental and control groups. Only one-fifth of the experimental class consisted of Anglo-American pupils, whereas almost one-third of the control class consisted of Anglo-American pupils.

Code switching by bilingual adults in the community was observed and the circumstances under which it did and did not occur were specified.

Spanish language usage is maintained and promoted in everyday conversations by the Mexican-American population in the community. It is supported by various church bodies. It is also promoted by some Spanish radio and TV programs and by the community library through its story hour in Spanish, its listings of recent acquisitions of books, records and films in Spanish. Spanish language instruction and bilingual education programs at both the elementary and secondary levels also reflect the school administration's support of the language and culture of a sizable number of its clients. While it is difficult to predict what the magnitude and social consequences of supporting the Spanish language and Mexican culture will be, its manifest approval of and encouragement by both ethnic groups--the Anglo-Americans and Mexican-Americans--strongly suggest a firm effort toward creating a truly pluralistic community.

CHAPTER IV

DESIGN OF THE STUDY

The design of this study consisted of two parts: a description of the experimental and control educational programs, their staffs, goals, and pupils; and the evaluation component, stated in terms of the variables of the study, the procedures for estimating the validity and reliability of the instruments, the data collection procedures, and the treatment of the data.

Organization of the Bilingual Education Program

The bilingual education program was begun in September, 1970 and originally consisted of one class of thirty kindergarten pupils. The class contained seven native speakers of English and twenty-three native speakers of Spanish. It was hoped that these same pupils would follow a course of bilingual instruction for a minimum of five consecutive years, extending through the fourth grade. Funding for the program was provided by the United States Office of Education and the local school district.

One kindergarten teacher and two bilingual aides staffed the kindergarten class. Originally, it was planned

91

that both aides would receive in-class experience so that one could remain with the teacher in the following year's kindergarten class while the other experienced aide would move to the first-grade bilingual class and assist the first-grade teacher. The kindergarten teacher taught the children language arts in their native languages and the other conventional kindergarten subjects. The aides concentrated their efforts on teaching English and Spanish as second languages, supervising outdoor play, art, dances and singing. Approximately one-half of the teaching day was devoted to activities conducted in each of the two languages.

The same staffing pattern, the same division of the day for English and Spanish activities, and the same teaching assignments were observed in the bilingual first-grade class, except that the first-grade bilingual aides also taught Mathematics, Social Studies and Science, while the teacher assumed the responsibility of teaching all other subjects, including the teaching of reading and writing in English and in Spanish.

The daily schedule of nearly five hours of instruction included full class circles, alternating English and Spanish, in music, stories, songs, and physical education. Each of the four daily class circles lasted from twenty to thirty minutes and was followed by small group instruction, lasting thirty to thirty-five minutes, in Language

Arts (listening comprehension, speaking, reading and writting) in the native language, English or Spanish as a Second Language (listening comprehension and speaking), and Social Studies, Mathematics, and Science in the native language. In addition, Art was given once a week, alternating instruction in English and Spanish. Field trips were also organized on an average of once a month to various places of Anglo-American and Mexican-American cultural significance in order to complement and extend cultural understanding gained in the classroom.

Bilingual Staff Selection and Development

Bilingual teachers were either selected from the existing staff in the school district or were hired on the basis of their ability to teach young children in two languages and cultures, their willingness to participate in an innovative and demanding program, and their willingness and ability to teach with and supervise at least one bilingual aide. All bilingual teachers were fully certificated. Bilingual aides were tested and selected according to their proficiency in the four skills of both languages, their teaching or supervisory experience with young children, and their training in special fields, such as art, music and dancing. No absolute standards of qualifications were observed in the selection of the bilingual instrucional staff; the best qualified, according to the above criteria, were selected.

Two weeks before the 1971-72 school year began and during the school year, all bilingual staff members were given training in the following areas: description and explanation of the total bilingual program, rationale for bilingual education, skills in lesson planning and material preparation, second language pedagogy, grouping patterns in bilingual education, testing and assessment, techniques for interviewing parents, the teaching of culture, rationale and techniques for conducting a small-scale sociolinguistic description of the community. Meetings of the project coordinator and the instructional staff were regularly held at least once weekly to identify problems as they arose and to discuss and apply appropriate solutions. Meetings of the bilingual staff and project parents were also regularly conducted to provide the parents with a deeper understanding of the program and to solicit from them suggestions for improvement and assistance in implementing various aspects of the instructional program.

Aims and Approach

The principal aims of the bilingual education program were: 1) to develop skills in English and Spanish, 2) to promote cognitive growth, 3) to foster maximum achievement in several subject areas in Spanish and in English, 4) to promote self-confidence and an ability to function in both cultural groups. The aims can be restated in summary

form and with reference to conventional instruction: 1) to provide all bilingually instructed children with an instructional program equivalent to that of their traditionally and monolingually instructed peers, and 2) to develop oral skills in the second language of both Spanish and English speaking children.

The general developmental stages of learning in the bilingual program that guided the approach to instruction in all areas were: 1) the child learns his native language and through his native language, 2) the child learns a second language, and 3) the child learns through the second language. It must be noted that these stages were used as a guide to designing the instructional program; they do not imply that each child progressed discretely from one stage to another in strict chronological order. On the contrary, it is recognized that linguistic and conceptual development proceed at different rates of speed and in different combinations of stages for different pupils.

The long-term goal of the program was to provide instruction in the native language of the pupil in the initial stages, while simultaneously establishing a foundation in the second language so that all pupils could eventually follow curricula in both languages. This approach to bilingual education also included an appreciation of the cultural patterns of behavior that form an integral part of language and an ability to function in both languages

easily and appropriately within the cultural constraints of each language.

All language learning, whether native or second, took place in an environment relatively free of instructional pressure. Children received a small amount of audio-lingual drill when the teacher treated new and relatively difficult sentences and sentence patterns as part of the language lesson. She repeated the utterance several times and elicited repetitions or substitutions from the children. Most of the time, however, was given to language development activities, such as sorting, matching, group games, action stories, directed play, and retelling stories.

Care was taken to ritualize new utterances for the learners by directing them to activities which required little or no variation in the language accompanying the activity. If an activity seemed to require language responses beyond the linguistic competence of the child, he was given additional help by the instructional staff; but, in all cases, the child was allowed to develop linguistically according to his own ability. Another practice observed in all language learning was that the strongest motivation for language learning was the child's desire to communicate with his peers. Consequently, the instructional staff facilitated language development by allowing the maximum use of language among the children themselves, and by giving direction to the activity only when the children needed assistance.

Otherwise, the instructional staff passed among the children, making comments and asking simple and basic questions about the ongoing activity.

At the beginning of the school year, all children were free to express themselves in either language at any time of the school day. After the first month, however, they were urged to communicate in the language that the teacher used for a particular block of time and in a particular area of the room. Except for an occasional lapse, the children readily adopted this new language behavior.

The curriculum for both the experimental class and the control class was the same, the principal difference being that the comparison class was taught in English only. The same English instructional materials were used in both classes, including materials especially designed to teach English as a second language. All English instructional materials were either adopted by the State of California or by the local school district.

The Spanish curriculum used in the experimental first-grade class was developed by the Spanish Curricula Development Center in Florida. Developed around four themes--classroom, family, school and community--guides or strands were used in Language Arts in Spanish, Social Science, Science/Mathematics, Fine Arts, and Spanish as a Second Language. This basic curriculum was supplemented by Spanish readers, songs, games, and other like materials that promote Spanish language development.

Population and Sample

The sample was drawn from two district schools, both directed by the same principal and both in the same quadrant of the community. The bilingual experimental class and the monolingual control class consisted of twenty-five and twenty-two pupils respectively. Each class contained native speakers of Spanish and native speakers of English. The control class was in its second year of monolingual instruction. Both classes were intact.

The children in the experimental bilingual class were placed in the following manner. All children ready to enter kindergarten were eligible for the program when it began in 1970. All parents of the children received an explanation and description of the program: the rationale of the program, its goals and instructional activities. Admission was voluntary. Parents were given the option of enrolling their children in either the bilingual program or in the traditional English-only program. A parent's request to withdraw his child from the bilingual program at any time was also allowed. There were no such withdrawals, although some transfers occurred because of family relocations. The first-grade experimental class was made up in part of the same children who were in the bilingual kindergarten class.

No special selection procedures were followed to form the control group; the children were placed by conventional methods used in the district for all first-grade pupils.

In addition to equating the bilingual experimental class and the monolingual control class in terms of curriculum and instructional materials, efforts were made to establish and maintain the same teacher-pupil ratio in both classes. This was accomplished principally by adjusting the enrollment in the control group to equal the enrollment in the experimental group. Efforts were also made to equate the classes in terms of instructional staff characteristics. Professional teachers and aides in each class met state and local district requirements. Finally, the professional teachers and aides in both classes were judged by their principal to be equally competent.

A limitation that may be reflected in the sample is social class. The Manual for Project Applicants and Grantees, issued by the U.S. Office of Education (1970, p. 2), states:

> The primary target population has substantial numbers of children, ages 3-18, who have limited English-speaking ability and come from low-income families (families with income below $3,000 or those receiving payments through a state plan program of aid to families with dependent children as approved under Title IV of the Social Security Act) in environments where the dominant language is not English.

The population in this study while narrowly restricted to a school district in a community in Northern California,

may, in view of the population description given by the U.S. Office of Education, have much wider application to Spanish-English bilingual education programs whose participants satisfy the population characteristics described above.

Control and Criterion Variables

Given the effect that social class and intelligence have on language and intellectual development, home educational environment and intelligence of the subjects were established as covariates to statistically equate the two intact groups. Other covariates used in this study were English listening skill, English speaking skill, Spanish listening skill and Spanish speaking skill, and age.

The criterion variables used to measure the effects of bilingual instruction in contrast to conventional instruction were intelligence, mathematics, attitude toward self, attitude toward Mexican-Americans, attitude toward Anglo-Americans, English listening skill, English speaking skill, Spanish listening skill, and Spanish speaking skill.

Estimates of Validity and Reliability of the Instruments

Since a brief description of the tests and measures used in this study can be found in Chapter I, only the procedures for estimating validity and reliability will be given here.

ERIC

1. English Listening Comprehension Test.

This test was consensually validated by a panel of bilingual specialists after analyzing the test according to the following criteria:

a. The test incorporates a standard variety of language, reflecting common usage.

b. The level of language difficulty is related to the ability of the learners in terms of units of sounds, lexical items, and structures.

c. The concepts are related to the learners' level of conceptual development.

d. The format and administration procedure of the test are suitable and include appropriate and easy directions.

e. The test questions are the recall type, based on the text of the test story.

f. The test measures specified skills and abilities which result in information on which to make decisions and judgments.

The panel members were Dr. Dolores Gonzales, Associate Professor of Elementary Education, The University of New Mexico; Dr. Mari-Luci Jaramillo, Assistant Director in Educational Service, Cultural Awareness Center and Assistant Professor of Elementary Education, The University of New Mexico; and Mrs. Rita Minkin, Coordinator of Language Arts, Albuquerque Public Schools.

An item analysis of the English Listening Comprehension Test was made, using the KR20 procedure. An estimate of reliability produced a coefficient of .58, which, although low, would appear adequate for experimental purposes. It's

probable that the estimate of reliability was adversely affected by the small number of items and its low ceiling. The level of difficulty of the items ranged from .06 to .55, and the item discrimination level ranged from .55 to .93.

2. Spanish Listening Comprehension Test. This test was validated by the same panel of bilingual specialists that validated the English Listening Comprehension Test. The same criteria were established as a basis for validation. Reliability was estimated by the KR20 procedure which resulted in a correlation coefficient of .74; the level of difficulty of the items ranged from .43 to .68, and the item discrimination level ranged from .29 to .95.

3. Language Usage Estimate. The following specifications were developed in order to supply an adequate measure of language usage in the home:

a. The items should furnish as many situations of bilingual usage as possible in the home environment.

b. The items should be of such a nature and so constructed that no respondent will be unable to understand the item in order to provide the requested information.

c. The items should elicit both listening and speaking experiences of the subject.

d. The questions should afford as objective a response as possible.

e. The responses to the questions should yield the relative amounts of English and Spanish usage.

2102

An external measure or estimate of twenty-five pupils' home bilingual usage was obtained. A teacher's aide who knew the children, their parents, and their home environment was asked to rate each child's language usage in the home. The aide was born and raised in the community and worked closely with parents as a school aide for the last three years. She was given the folloowing instructions:

> Each child is to be rated according to the amount of Spanish and English he hears and speaks in and near his home. In determining the rating, consider these points: the relative amounts of English and Spanish that the subject hears spoken by various members of the family, playmates and babysitters; and the relative amounts of English and Spanish that the subject speaks to various members of the family, playmates and babysitters.

The aide was asked to assign a numerical rating to each child on a scale from 1 to 5 as follows:

1. English monolingual: hears and speaks English; hears and speaks little or no Spanish.

2. English dominant: hears and speaks English most of the time and hears and speaks Spanish some of the time.

3. Apparent bilingual: hears and speaks both English and Spanish in approximately equal amounts.

4. Spanish dominant: hears and speaks Spanish most of the time and hears and speaks English some of the time.

5. Spanish monolingual: hears and speaks Spanish; hears and speaks little or no English.

The rater completed her ratings before she had seen a copy of the Language Usage Estimate.

The Pearson product-moment correlation coefficient between the ratings that resulted from the Language Usage Estimate interview and the ratings assigned by the teacher's aide was .95 at the .001 level of significance.

The test-retest procedure was used to estimate reliability. The home language usage of twenty-five pupils was rated through the use of the Language Usage Estimate at the beginning of the school year and again four weeks later. The reliability coefficient, using the Pearson product-moment procedure, was .97 at the .001 level of significance.

3. Home Educational Environment. This interview schedule was based on an interview schedule developed by Dave (1963) to measure the dynamic characteristics of the home environment of fifth-grade children. The Home Educational Environment schedule was adapted for use with first-grade children in this study. An estimate of the validity of Dave's interview schedule and total achievement scores showed a correlation of .799. This correlation indicated the predictive validity of the instrument, given total achievement scores as the criterion variable. An estimate of the validity of the adapted instrument used in this study was made by comparing the subscales of the seven environmental themes with the academic achievement scores

assigned by the teacher to each of the twenty-five bilingually instructed children after the first five weeks of instruction. The achievement scores assigned by the teacher ranged from 1 to 5, lowest to highest. The Pearson product-moment procedure produced a correlation between the teacher's estimate of achievement and the seven subscales ranging from .43 to .80 at the .001 level of significance. Reliability was estimated by the test-retest method after an interval of one month with a sample of twenty-five pupils. The relinbilities of the subscales ranged from a correlation of .91 to a correlation of 1.00 at the .001 level of significance.

4. Evaluation of Me, Mexican-Americans and Anglo-Americans. The semantic differential technique used to measure the student's attitude toward himself and the two culture groups was recognized by Anastasi (1968, pp. 534-535) as "a standardized and quantified procedure for measuring the connotations of any given concept for the individual." She added that concepts to be rated could be chosen to fit the problem under investigation, including a respondent's rating of himself and members of different ethnic or cultural groups.

Kerlinger (1964, pp. 567-571) described the procedure for constructing a semantic differential for research use and postulated certain criteria. He stipulated that the selection of concepts should be relevant to the research

problem. In this study, a measure of the pupil's attitude toward himself and the two culture groups represented in the instructional program was needed. Consequently, the concepts that were measured were Me, Anglo-Americans, and Mexican-Americans. These concepts appeared to be relevant and loaded with attitudinal meaning.

The next step in the construction of the instrument, according to Kerlinger, was the selection of appropriate scales or adjective pairs. One criterion determining the selection was factor representativeness. Kerlinger continued that for studies of attitudes and values only the scales of the evaluative factor were needed. Since the purpose here was to study pupils' attitudes, only scales of the evaluative factor were used. A second criterion in the selection of scales was the relevance to the concepts used. The scales should have known factorial content. All the evaluative scales selected were taken from Osgood's (Osgood, et al., 1967, p. 37) list. Of the eight scales applied to all three concepts measured, six had loadings of .75 or better and were essentially evaluative inasmuch as the extracted variance was almost entirely on the evaluative factor. The two remaining scales, although not as highly loaded on the evaluative factor, nevertheless restricted their loadings chiefly to this factor. The loadings of the two remaining scales, rich-poor and healthy-sick, were .60 and .69 respectively.

With regard to the format of the semantic differential, Kerlinger noted that three-point to nine-point scales could be used; he stated that the five-point scale was suitable for use with children.

The several criteria listed above appeared to be met in the construction of the semantic differential used to measure the three concepts in this study. The content validity of the three instruments was built into them from the outset through the choice of appropriate items; the preparation of the instruments was based on a close examination of the relevant literature.

An estimate of reliability was accomplished by the test-retest method. Twenty-five pupils in the bilingual class were retested on the concepts Me and Anglo-Americans after an interval of three weeks. The application of the Pearson product-moment procedure resulted in correlation coefficients between seven scales of the concept Me, ranging from .63 to .81, all significant at the .001 level. The correlation coefficients of seven scales of the concept Anglo-Americans ranged from .43 to .69, significant at levels ranging from .001 to .01.

5. Dailey Language Facility. Anastasiow's review of this test in Buros' The Seventh Mental Measurements Yearbook (1972), pp. 1344-1345) stated that correlation between the Dailey Language Facility "and measures of readiness, reading achievement, and intelligence range from -.19 to .37

with median .20 . . ." Reliability estimates based on the test-retest method "range from .46 to .90 with median .67."

6. Math Subtest of the Cooperative Primary Tests. In his review of the Cooperative Primary Tests in Buros' The Seventh Mental Measurements Yearbook (1972, pp. 25-26), Hanna rated the content validity of the tests as outstanding. However, he cited three deficiencies in the reliability section of the Handbook. Data on reliability over periods greater than two weeks were not reported. Data were reported only for pooled samples of several schools, not for separate schools. And, finally, "reliability coefficients and standard errors of measurement are not reported for various levels of performance on the respective tests." The Handbook (1967, pp. 56-57), however, does reflect two types of reliability estimates: internal consistency coefficients, based on the norms samples, and product-moment correlation coefficients between scores on alternate forms based on samples used in equating alternate forms. The internal consistency coefficients were computed by using the Kuder-Richardson Formula 20. The coefficients of internal consistency show that the reliabilities for the Math subtest have a range of .83 to .86. Alternate form correlations range from .77 to .84.

7. Coloured Progressive Matrices. In Buros' The Fourth Mental Measurements Yearbook (1953, p. 417), Banks reported in her review of the Coloured Progressive Matrices

that reliability coefficients given for the results of children under seven showed a retest reliability in the vicinity of 0.65. By age nine, the retest reliability increased to at least 0.80. Tests were repeated after an interval of two months; the numbers of children tested ranged from 35 to 100.

Citing the claims of Raven, the test author, Banks observed that validity of the test was estimated by correlating it with the Crichton Vocabulary Scale and the Revised Stanford-Binet Scale. It correlated with both tests at about 0.5.

Data Collection Procedures

Except for six pupils in both groups all students were pretested and their parents were interviewed during the first month of the school year. The remaining six pupils were pretested within the first three months of the school year.

To prepare the first-grade pupils in both groups in the mechanics of taking the English and Spanish listening comprehension tests, the teacher and her assistant in each class administered a practice test in English and a practice test in Spanish. When the teachers determined that both groups were ready to take the tests, the English test was administered by the project coordinator to both groups on the same day. Each child received an answer sheet

that bore a coded number; no other identification of the children was made. To discourage "looking on" and to assist the pupils to follow the test item by item, they were provided cover sheets that had a cut-out which exposed only one test item at a time on the answer sheet. Additional help was given, when needed, by repeating phrases from the instructions. The answer sheets were collected, thoroughly mixed and hand scored. Scores were reported as number right. On the following day the Spanish Listening Comprehension Test was administered to both groups in the same way. Average testing time for the English test was eleven minutes; for the Spanish test, nine minutes.

Speaking proficiency in Spanish and English was measured by the same instrument, the Dailey Language Facility test. Each child was individually tested by the same testor, using a cross-over procedure, i.e., one half of each group took the Spanish test first and several days later the English test, while the other half of each group took the English test first and the Spanish test a few days later. All responses were taped and coded, and rated by a bilingual adult according to the crietria given in the test manual. The ratings in English and in Spanish respectively produced the scores in English and Spanish speaking proficiency. Average testing time for each child in each language was approximately five minutes.

Intelligence was measured by a school psychologist

who was adequately bilingual to give the few instructions in both languages. This untimed, nonverbal test was administered individually and produced a possible maximum raw score of 36. Average testing time was twenty minutes. The student was identified on a score report sheet by coded number only. The sheets were thoroughly mixed and scored by adding the number right.

The end-of-year Math test was group administered by each teacher with the assistance of an adult monitor. Preceded by a pilot test, the test proper was untimed with an expected average time of fifty minutes. Answer sheets identified the students by coded number only. The answer sheets were thoroughly mixed and hand scored by an individual not associated with either class. This was the only test in the study that was not administered to the entire sample by the same person.

Data regarding home educational environment were based on information received through a face-to-face focused interview in the homes of the parents of each subject. Parents were identified on the interview sheet by coded number. The interviews were conducted in the language preferred by the parents. One interviewer with extensive experience in interviewing parents in the community, asked the questions while an assistant made written notes of the parents' responses. Before the interview, parents were given the reasons for the interview, a guaranty of anonymity

and the choice of answering or not answering any or all of the questions. No parent declined to answer any of the questions. After the interview, each respondent was asked if he objected to any part of the interview or to the interview in general. Again, there were no objections. On the contrary, those who amplified their answers to this question replied that they were happy that the "school people" were interested enough in their children to ask so many questions about them. The information obtained through the interview regarding the first five themes was interpreted by applying the rating scales and criteria developed by Dave (1963). If one of the five themes was divided into two parts on the interview sheet, each part was rated separately, and the ratings were combined and averaged, yielding one rating. If the average resulted in a fraction, it was rounded off to the next higher number. The range of ratings for these five themes was 1 to 9. Information pertaining to the last two themes, parents' occupations and educational background, was classified according to Warner's Revised Occupational Rating Scale (Warner, 1949, pp. 140-141) and Warner's Educational Rating Scale (1949, p. 154), both seven-point scales. For the purposes of this study, the Occupational Rating Scales were reversed; the Educational Rating Scales were not. All ratings of all themes in all interviews were interpreted by a third bilingual who took no part in the interviewing. All interview

sheets were thoroughly mixed before ratings were made. Average time for each interview was twenty-one minutes.

Information on language usage in the home domain was obtained immediately after the interview on home educational environment was completed. As preparation for interviewing the parents, the two bilingual interviewers practices their techniques for both measures on each other and on other adults in the community before they began the home visits. The procedure followed in this interview is found in Appendix E. One interviewer conducted the interview while her assistant noted the responses on the ESTIMATE sheet. All sheets were thoroughly mixed and scored by an educator who did not participate in the interview. Average time for each interview was six minutes.

The evaluations of Me, Mexican-Americans and Anglo-Americans were preceded by pilot evaluations of concepts familiar to the subjects. The two practice concepts used in this study were Firemen and Policemen. As preparation for the pilot evaluations and the three concepts to be rated for this study, the children were taught to distinguish the value of the faces along the five-point scales (very rich; not so rich; not rich, not poor; a little poor; very poor) within the context of the bipolar adjectives and with reference to each of the concepts. All explanations and instructions were given in both languages. A bilingual adult, with the assistance of one adult monitor,

administered these measures to both groups. It was made clear to the children that there were no right or wrong answers and that the way they felt about the three concepts was of special interest. The scales were distributed to them one at a time. To inhibit "looking on," each pupil was provided a cover sheet with a cut-out that exposed only one adjective scale at a time. To increase the focus of the subjects' understanding of Mexican-Americans and Anglo-Americans, a large colored picture of a Mexican-American family and a large colored picture of an Anglo-American family were clearly displayed and referred to in the classroom of each group. The scales for each concept were number coded. Scoring followed a thorough mixing of the sheets. Average time for administering each concept was seven minutes.

Classification of all subjects according to ethnicity was accomplished by two bilingual school district employees. They observed the children in class, on the playground, at lunch, and at home while they made conventional home visits. All observations, made during the first semester of school, were directed to the four criteria that constituted the functional definition of Mexican-American. The criteria were discussed and agreed upon by six Mexican-American bilingual educators. Subjects were classified as either Mexican-American or Anglo-American. When the two observers assigned different classifications to the same

child, a third Mexican-American bilingual who knew the child was asked to classify him. The classification assigned by two of three observers was accepted.

All posttesting was completed during the month of May. All end-of-year retesting was accomplished by the same personnel who administered the same tests at the beginning of the school year.

Treatment of the Data

Although the six hypotheses are stated in Chapter I, they will be given here again since the treatment of the data refers directly to the hypotheses.

Hypothesis One: Bilingually instructed children will achieve equal English language proficiency in listening and speaking skills when compared to a control group of monolingually instructed counterparts.

Hypothesis Two: Bilingually instructed children will achieve equal Spanish proficiency in listening and speaking skills when compared to a control group of monolingually instructed counterparts.

Hypothesis Three: Bilingually instructed children will achieve equal cognitive growth when compared to a control group of monolingually instructed counterparts.

Hypothesis Four: Bilingually instructed children will achieve mastery in mathematics in English equal to that of the control group of monolingually instructed counterparts.

Hypothesis Five: Bilingually instructed children will not manifest a less favorable attitude toward self or toward either ethnolinguistic group than their monolingually instructed counterparts.

Hypothesis Six: Bilingually instructed children will have attendance rates equal to that of their monolingually instructed counterparts.

To test hypotheses one, two and three, a multiple analysis of covariance procedure was used, the covariates being age, intelligence, home educational environment, listening comprehension in Spanish, listening comprehension in English, speaking in Spanish, and speaking in English. A multiple regression procedure was applied to the seven themes that consitute the index of home educational environment.

Hypothesis four was tested by single classification of analysis of variance, since only posttest data were collected for mathematics.

Hypothesis five was tested by analyzing the data according to one-way analysis of variance for each adjective scale for each of the three concepts: Me, Anglo-Americans, and Mexican-Americans.

Hypothesis six was tested by applying the ANOVA procedure to the data.

Data gathered from the Language Usage Estimate was analyzed by applying the ANOVA procedure.

Summary

A description of the bilingual education program under study included a brief history of the program from its inception, emphasizing the teaching responsibilities of the instructional staff and the daily instructional schedule. Also treated were the circumstances under which the instructional staff was selected and the composition of the pre- and in-service training the staff received.

The goals of the bilingual education program were listed, and the underlying theoretical approach to bilingual instruction and to second language learning were also explained.

The sample, comprised of the experimental and control groups, was characterized; in addition to being statistically equated, the experimental and control groups were equated in terms of curriculum, instructional material, teacher-pupil ratio, and instructional staff characteristics.

A list of the control and criterion variables was followed by a comprehensive description of the methods used to obtain the data and the various statistical procedures employed to test the several hypotheses.

CHAPTER V

ANALYSIS OF DATA

Assessed in this study was the effectiveness of bilingual education for Anglo- and Mexican-American first-grade children who had studied and learned through both English and Spanish. What evidence is there to support the effectiveness of the demonstration bilingual education program when compared to a traditional monolingual education program? Did the bilingually instructed children make as much progress in English language skills development, Spanish language skills development, mathematics, and cognitive functioning as similar children in a traditional monolingual first-grade class? Did the bilingually instructed children show as favorable an attitude toward self and toward the salient ethnolinguistic groups as their monolingually instructed peers? Did the bilingually instructed children attend school as regularly as their monolingually instructed peers?

Comparison of Groups

Two groups of children were compared on the features known or suspected to affect linguistic and mental development: age, intelligence, home educational environment

(including socioeconomic status), attendance, educational background, language development, and sex. The two schools from which the sample was drawn are in the same school district, directed by the same principal, and in the same quadrant of the city. Approximately the same percentage of boys and girls were in the two groups: the experimental group contained 44% girls and 56% boys; the control group had 45% girls and 55% boys.

Table 5 reflects the range of intelligence scores for the experimental and control groups on Raven's Coloured Progressive Matrices. It should be noted that there was a wide range of scores and that there was no effort made to attract only the brightest students for the experimental group. This observation was confirmed in Table 6, where there were no reliable differences in mean intelligence scores of the two groups.

Other class comparisons presented in Table 6 reveal that significant differences existed on age, Spanish Language Skills, and ability to speak English. The control group rated reliably higher on age, and the experimental group rated reliably higher on Spanish Language Skills and ability to speak English.

Attendance rates for both groups reflected no significant statistical difference. Classroom observations of both groups revealed no apparent differences in discipline or attention problems. There was no evidence to suggest that

the experimental program was more demanding. On all other factors known or assumed to affect academic achievement, it is apparent that the groups are generally comparable.

Table 5

CLASS COMPARISONS OF INTELLIGENCE SCORES AT THE START OF FIRST GRADE

	Number and percentage of pupils falling in percentile groups			
Percentiles*	Experimental Class: N = 25		Control Class: N = 22	
95	3	12%	2	9%
90	0	0%	2	9%
75	7	28%	3	14%
50	7	28%	7	32%
25	2	8%	5	23%
10	5	20%	1	4%
5	1	4%	2	9%

*Working percentile points calculated from the scores of 608 Dumfries (Scotland) children over 5 and under 11½ years old.

To further increase comparability of the experimental and control groups an analysis of covariance procedure was applied to statistically adjust each of the criterion variables for initial differences in age, intelligence, home educational environment, listening and speaking ability in Spanish, and listening and speaking ability in English. The

Table 6

GROUP COMPARISONS OF MEAN SCORES ON MEASURES OF AGE, INTELLIGENCE, COMPONENTS OF HOME EDUCATIONAL ENVIRONMENT, SPANISH LANGUAGE SKILLS, ENGLISH LANGUAGE SKILLS, AND ATTENDANCE

	Experimental N=25	Control N=22	F-ratio (df=1.45)	Significance
1. Age, September, 1971	75.1	80.8	7.90	.01
2. Intelligence, Pretest	102.1	103.2	.06	n.s.
3. Home Educational Environ.				
1. Emphasis on Education	3.4	3.3	0.02	n.s.
2. Quality of Linguistic Environment	3.2	3.0	0.20	n.s.
3. Home Guidance & Facilities for School Learning	3.1	3.2	0.14	n.s.
4. Enrichment of Home Environment	3.1	2.7	0.56	n.s.
5. Educational Facilities	2.9	2.9	0.00	n.s.
6. Parents' Occupation	2.2	2.5	0.61	n.s.
7. Parents' Education	3.1	3.3	0.16	n.s.
4. Spanish Language Skills, Pretest				
1. Dailey Language Facility	7.9	4.6	4.08	.002
2. Spanish Listening Comprehension Test	6.0	2.2	32.04	.001
5. English Language Skills, Pretest				
1. Dailey Language Facility	12.5	9.2	4.80	.05
2. English Listening Comprehension Test	7.6	8.1	0.50	n.s.
6. School Attendance Percentage of days absent	2.7	3.1	0.22	n.s.

adjusted mean scores were then tested by analysis of variance.

Results

The findings to be discussed here are presented in Table 7, where the average scores for the experimental and control groups are compared on each of the measures described earlier.

1. English Language Skills. The results from the Skoczylas' English Listening Comprehension Test (item 1 in Table 7) suggest that the bilingually instructed pupils' skill in English listening comprehension is equivalent to that of their monolingually instructed peers. The experimental groups also performed as well as the control group in English speaking ability as measured by the Dailey Language Facility test (item 2). There was no significant difference in performance in English listening and speaking skills between the groups. This indicates that the ability of the experimental class to understand and to speak English has not been restricted by the bilingual education program.

2. Spanish Language Skills. There was no significant difference between the experimental and control children's performance on the Skoczylas' Spanish Listening Comprehension Test (item 3). On the Dailey Language Facility test (item 4) in Spanish, however, the experimental class rated significantly better than the control class.

Table 7

MEANS AND ADJUSTED MEANS FOR FIRST-GRADE EXPERIMENTAL AND CONTROL CLASSES

Test Name	Experimental Mean	Experimental Adjusted	Control Mean	Control Adjusted	Grand Mean	F Ratio (df=1,32)*	Signif-icance
ENGLISH LANGUAGE SKILLS							
1. Skoczylas' English Listening Comprehension Test, June posttest	9.2	9.3	9.1	9.0	9.2	0.21	n.s.
2. Dailey Language Facility, English, June posttest	17.9	17.0	14.0	15.1	16.1	1.78	n.s.
SPANISH LANGUAGE SKILLS							
3. Skoczylas' Spanish Listening Comprehension Test, June posttest	8.0	6.0	4.8	7.0	6.5	0.92	n.s.
4. Dailey Language Facility Spanish, June posttest	13.7	11.9	6.4	8.5	10.3	5.40	.05
INTELLIGENCE MEASURE							
5. Raven's Coloured Progressive Matrices, June Posttest	109.6	110.8	108.1	106.7	108.9	0.54	n.s.
MATHEMATICAL SKILLS							
6. Math sub-test of Cooperative Primary Tests, June test	27.7	26.8	34.5	35.5	30.9	5.37	.05

*The df changed from Table 6 because the error term in the ANOCOVA was reduced by the number of control variables used to estimate the regression equations.

3. Intelligence Measure. The posttest of Raven's Coloured Progressive Matrices (item 5) revealed no significant differences between the experimental and control classes. This finding suggests that there is no evidence of any intellectual deficit or lag attributable to the bilingual education program assessed in this study.

4. Mathematics Skills. On the Math sub-test of the Cooperative Primary Tests (item 6) there was a significant difference favoring the control group. Performance in terms of grade level indicates that neither group scored at the second-grade level; the mean of the experimental group is equivalent to the 1.4 grade level while the mean of the control group is equivalent to the 1.7 grade level. The failure of the experimental group to achieve as well as the control group is a finding that is not totally unexpected. Two explanations for these results seem reasonable.

First, the test was administered in English, the language in which the entire control group received instruction in mathematics, but less than half of the pupils in the experimental group received instruction in mathematics in English while the remaining pupils received instruction in Spanish. In spite of the fact that both groups performed equally well on the English Language Skills measures, the concepts measured in the Math test are rather complex and require a high degree of ability in English listening comprehension. For example, Number 7 in the Math test reads:

> Look at the picture in the arrow. Alan is standing by the merry-go-round watching the elephant. After the elephant goes by, how many animals will pass before the elephant goes by again?

In the first half of the test, the teacher reads a spoken stimulus like the one given above. It is evident that if a pupil does not grasp the stimulus, he cannot answer the item correctly unless he hazards a guess.

The second explanation for the uneven performance of the two groups on the mathematics measure deals with a probable irregularity in the administration of the test. Except for this test, all measures were administered to both groups by the same person. In this case, however, each teacher administered the test to her own class. The teacher of the experimental group administered the test to the entire class at one time, except for three absentees who took the test as a small group. The teacher of the control group administered the test to small groups of pupils and to four pupils individually. It is therefore suggested that the lack of uniformity of test administration and the fact that several of the children in the experimental group did not receive instruction in mathematics in English may account for the lower experimental group scores on a measure that employs in part language stimuli related to complex concepts.

5. Home Language Usage of Three Generations of Speakers. Data shows that there was no significant differences between the two groups on home usage of Spanish and

English of each of the three generations of speakers. An inspection of the means in Table 8, however, shows that each generation associated with the control group uses more English in the home than the generations associated with the experimental group. On the other hand, the generations associated with the experimental group use more Spanish in the home than the corresponding control generations. Within each generation of the control group, a greater relative use of English is indicated. Within the control group, however, only the youngest generation shows a greater relative use of English in the home; the other two older generations use more Spanish than English in the home.

6. Attitudes Toward Self and Two Salient Ethnolinguistic Groups. The data were analyzed using separate one-way analyses of variance for each adjective scale for each of the three concepts: Me, Anglo-American, and Mexican-Americans. Tests of significance were made, using an analysis of variance procedure. The findings of both groups' responses to the concept Me are presented in Table 9.

The pupils in both groups viewed themselves relatively similarly on six of the eight scales. Regardless of their instructional program of their ethnic background, all pupils felt themselves to be relatively nice, happy, clean, rich, kind, and healthy. They viewed themselves significantly differently concerning two traits: the control group viewed

Table 8

GROUP COMPARISONS OF MEAN SCORES OF HOME LANGUAGE USAGE BY THREE GENERATIONS OF SPEAKERS

		Experimental Group, N=25	Control Group, N=22	F Ratio
Generation I (Children and their contemporaries)	Spanish	2.12	1.32	1.88
	English	4.44	4.68	0.19
Generation II (Children's parents and their contemporaries)	Spanish	4.24	3.41	0.89
	English	4.16	5.27	1.49
Generation III (Children's grandparents	Spanish	2.12	1.55	1.30
	English	1.20	1.77	1.21

Note: No F-ratio was significant at the .05 level.

2127

Table 9

ATTITUDE TOWARD THE CONCEPT "ME"

Note: Higher scores indicate a more favorable attitude toward the concept.

Trait		Groups: Experimental	Groups: Control	F-Ratio (df=1,45)	Significance
1. nice (simpático)	awful (malo)	4.72	4.36	1.39	n.s.
2. handsome (guapo)	ugly (feo)	4.32	3.00	14.93	.01
3. happy (contento)	sad (triste)	4.24	4.09	0.18	n.s.
4. clean (limpio)	dirty (sucio)	4.12	3.77	0.96	n.s.
5. rich (rico)	poor (pobre)	3.36	3.36	0.00	n.s.
6. kind (bondadoso)	cruel (cruel)	3.96	3.82	0.14	n.s.
7. fair (justo)	unfair (injusto)	4.52	3.68	5.52	.05
8. healthy (sano)	sick (enfermo)	3.96	3.46	1.26	n.s.

itself as less handsome and less fair than the experimental group. The general similarity of responses implies that the bilingual education program did not adversely affect the self-image of the experimental group; on the contrary, the higher ratings that the group gave on several traits suggests that the bilingual instruction had a favorable effect on the group's self-concept.

Similar responses are found in Table 10 regarding the concept Mexican-Americans. On six of the eight scales, the pupils' reactions were similar. All the pupils viewed Mexican-Americans as relatively nice, handsome, rich, kind, fair, and healthy. However, the control group perceived Mexican-Americans to be relatively sad and dirty.

Pupils from both groups responded relatively similarly to seven of the eight scales of the concept Anglo-Americans. All pupils viewed Anglo-Americans as relatively handsome, happy, clean, rich, kind, fair and healthy. They viewed Anglo-Americans significantly differently with respect to one trait; the control group perceived Anglo-Americans as less nice than did the experimental group. It is noteworthy that the experimental group which contained only 20% Anglo-American pupils, in contrast to the control group's 32%, showed a more favorable view toward Anglo-Americans.

7. Analysis of Home Educational Environment Themes. A step-wise linear multiple regression analysis was applied to the seven themes that constitute the Home Educational

Table 10

ATTITUDE TOWARD THE CONCEPT "MEXICAN-AMERICANS"

Note: Higher scores indicated a more favorable attitude toward the concept.

Trait		Groups: Experimental	Groups: Control	F-ratio (df=1,45)	Significance
1. nice (simpático)	awful (malo)	4.28	4.41	0.16	n.s.
2. handsome (guapo)	ugly (feo)	4.12	4.14	0.00	n.s.
3. happy (contento)	sad (triste)	4.28	3.50	4.82	.05
4. clean (limpio)	dirty (sucio)	3.88	3.14	4.09	.05
5. rich (rico)	poor (pobre)	3.48	3.14	0.53	n.s.
6. kind (bondadoso)	cruel (cruel)	4.08	3.50	2.35	n.s.
7. fair (justo)	unfair (injusto)	4.08	3.41	3.43	n.s.
8. healthy (sano)	sick (enfermo)	4.08	3.32	3.16	n.s.

Table 11

ATTITUDE TOWARD THE CONCEPT "ANGLO-AMERICANS"

Note: Higher scores indicated a more favorable attitude toward the concept.

Traits			Groups: Experimental	Groups: Control	F-ratio (df=1,45)	Significance
1.	nice (simpático) . . .	awful (malo)	4.76	4.14	5.23	.05
2.	handsome (guapo) . . .	ugly (feo)	3.96	3.59	1.28	n.s.
3.	happy (contento) . . .	sad (triste)	4.20	3.77	1.27	n.s.
4.	clean (limpio) . . .	dirty (sucio)	4.24	4.23	0.00	n.s.
5.	rich (rico) . . .	poor (pobre)	3.64	3.09	1.63	n.s.
6.	kind (bondadoso) . . .	cruel (cruel)	4.12	3.55	2.35	n.s.
7.	fair (justo) . . .	unfair (injusto)	4.12	3.96	0.20	n.s.
8.	healthy (sano) . . .	sick (enfermo)	4.16	3.73	1.21	n.s.

1131

Environment index in order to determine the power of its seven themes to predict academic achievement and cognitive growth as measured by the scores of the sample on the four language posttests, the mathematics test, and the intelligence posttest. The data are presented in Table 12.

It is noteworthy that negative correlations with the predictor variables occurred consistently and only with the two criterion variables that measure achievement in Spanish language skills. The higher the score on the predictor variable, the lower the achievement predicted in Spanish language skills. These negative correlations probably reflect, when compared to the experimental group, the strikingly low scores of many of the pupils in the control group on the Spanish language measures in contrast to their average and above-average scores on the seven themes of the Home Educational Environment index.

The best single predictor of all the criterion variables was theme 7, parents' education. It showed the highest correlation with four of the six criterion variables; Math, English Listening Comprehension, Spanish Listening Comprehension, and Speaking in Spanish. It was also the second best single predictor of the remaining two criterion variables, Speaking in English, and Intelligence.

The predictive ability of theme 7, parents' education, was confirmed when a step-wise multiple regression analysis was applied. The data are presented in Table 13. Achievement

Table 12

INDIVIDUAL CORRELATION COEFFICIENTS OF SEVEN THEMES OF THE HOME EDUCATIONAL ENVIRONMENT INDEX AND THE SIX CRITERION VARIABLES, N=47

Predictor Variables: The Seven Themes of the Home Educational Environment Index	Criterion Variables: Math r	Listening Comprehension, Eng. r	Speaking in English r	Listening Comprehension, Span. r	Speaking in Spanish r	Intelligence r
1. Emphasis on Education	.346*	.430*	.272	-.070	-.418*	.369*
2. Quality of Linguistic Environment	.400*	.432*	.354*	-.271	-.382*	.497*
3. Home Guidance & Facilities for School Learning	.392*	.279	.223	-.206	-.326*	.449*
4. Enrichment of Home Environment	.371*	.285	.382*	-.105	-.280	.461*
5. Educational Facilities	.336*	.347*	.244	-.168	-.224	.363*
6. Parents' Occupation	.261	.295*	.130	-.288*	-.492*	.247
7. Parents' Education	.505*	.498*	.376*	-.346*	-.553*	.468*

*Significant at the .05 level.

Table 13

MULTIPLE CORRELATION COEFFICIENTS WITH SIX CRITERION VARIABLES AS DEPENDENT VARIABLES AND THE SEVEN THEMES OF THE HOME EDUCATIONAL ENVIRONMENT INDEX AS INDEPENDENT VARIABLES, N=47

Criteria	r	Predictors					
Mathematics	.52	Parents' Education	Parents' Occupation	Home Guidance & Facilities for Learning			
Beta Weight		2.22	-0.50	1.12			
English Lis-	.57	Parents' Education	Emphasis on Education	Enrichment of Home Environment	Quality of Linguistic Environment	Home Guidance & Facilities for Learning	Educational Facilities
Beta Weight		0.36	0.24	-0.33	-.31	-0.33	0.34
Spanish Listening Comprehension	.57**	Parents' Education	Emphaiss on Education	Parents' Occupation	Quality of Linguistic Environment	Enrichment of Home Environment	
Beta Weight		-0.88	1.26	-1.11	-0.74	0.44	
Speaking English	.48	Enrichment of Home Environment	Parents' Education	Parents' Occupation	Home Guidance & Facilities for Learning	Quality of Linguistic Environment	Educational Facilities
Beta Weight		1.29	0.74	-0.49	-0.73	0.72	-0.72

Table 13

(continued)

Criteria	r	Predictors					
Speaking Spanish	.63**	Parents' Education	Parents' Occupation	Educational Facilities	Emphasis on Education		
Beta Weight		-2.34	-2.14	1.07	0.54		
Intelligence	.56*	Quality of Linguistic Environment	Parents' Education	Enrichment of Home Environment	Educational Facilities	Home Guidance & Facilities for Learning	Parents' Occupation
Beta Weight		2.45	1.67	1.92	-2.62	2.12	-1.19

* Significant at the .05 level.

** Significant at the .01 level.

in Math was predicted by parents' education, parents' occupation, and home guidance and facilities for school learning. The multiple correlation coefficient was .52, significant at the .05 level.

Achievement in Listening Comprehension in English was predicted by parents' education, emphasis on education, enrichment of home environment, quality of linguistic environment, home guidance and facilities for school learning, and educational facilities. The multiple correlation coefficient was .57, significant at the .05 level.

Achievement in Listening Comprehension in Spanish was predicted by parents' education, emphasis on education, parents' occupation, quality of linguistic environment, and encrichment of home environment. The multiple correlation coefficient was .57, significant at the .01 level.

Achievement in Speaking English was predicted by enrichment of home environment, parents' education, parents' occupation, home guidance and facilities for school learning, quality of linguistic environment, and educational facilities. The multiple correlation coefficient was .48, not significant at the .05 level.

Achievement in Speaking Spanish was predicted by parents' education, parents' occupation, educational facilities, and emphasis on education. The multiple correlation coefficient was .63, significant at the .01 level. Because of the small sample used in this study, these findings should be considered preliminary and tentative.

Growth in intellectual functioning as measured by an intelligence measure was predicted by quality of linguistic environment, parents' education, enrichment of home environment, educational facilities, home guidance and facilities for school learning, and paretns' occupation. The multiple correlation coefficient was .56, significant at the .05 level.

CHAPTER VI

DISCUSSION, SUMMARY, AND RECOMMENDATIONS

Discussion

In the United States, the educational and social consequences of the school's response to children whose home language is different from the school language have not been satisfactory, presumably because the educational program made available to non-English speaking children did not accommodate the development of their native language and their learning through it. The latest curriculum advanced by educators to provide a more fulfilling education for these children and their English speaking peers is the bilingual education program. How effective is bilingual education when compared to the traditional monolingual education? This evaluative study was undertaken to provide evidence to support an answer to this question.

More specifically, the purpose of this study was to develop and apply an evaluation model that would characterize the community, the parents of the children, the children themselves, the program, and the children's performance; and, as a result of the above, to generate a field-tested model for application to other similar bilingual education programs.

This was a study of first-grade children in a Spanish-English bilingual education program funded under Title VII of the Elementary and Secondary Education Act. Placed in the context of the socio-cultural background of the community and its inhabitants, the program was evaluated to determine if the bilingually instructed children had experienced cognitive or affective deficits attributable to their bilingual instruction.

The assessment of the performance of bilingually instructed pupils at the end of first grade and after two years of bilingual education demonstrated the ability of the pupils to progress normally in the regular English curriculum and to make substantial additional progress in the Spanish curriculum in the same amount of time that the control group of monolingually instructed pupils devoted exclusively to the English curriculum.

The bilingually instructed children are learning two languages simultaneously with no noticeable difficulties, reflecting, perhaps, a beneficial transfer effect from one language to another. Although the pupils in the control group received no formal school instruction in Spanish, their development of oral Spanish language skills was assessed and compared to the experimental group in order to determine the relative effectiveness of formal language learning versus home language learning. There was no significant difference between the control group and the experimental group in

Spanish listening comprehension. In ability to speak, however, and with approximately equal numbers of pupils who spoke Spanish at home according to their parents' report, the experimental group scored significantly higher than the control group. The bilingual group's superior performance in speaking Spanish suggests that formal language instruction in the classroom combined with formal language learning at home leads to greater language development than either formal classroom instruction or informal language learning alone. The latter means of Spanish language development was practiced by the Spanish speaking pupils in the control group whose achievement was significantly lower than that of the experimental group. It should also be borne in mind that twelve, almost one-half, of the children in the bilingual class used little or no English in the home domain at the beginning of first grade. In spite of this limitation, the bilingual group performed as well as the control group in achievement in English skills.

When tested in Math in English, the bilingually instructed children performed significantly lower than the control group. This outcome suggests that training in mathematics in Spanish received by most of the bilingually taught pupils did not transfer when measured by a test that required a high degree of listening comprehension in English. Also, the lack of uniformity of test administration may have adversely affected the comparability of the Math scores.

On all three concepts--Me, Anglo-Americans, and Mexican-Americans--the experimental group rated the concepts as favorably as the control group. A total of five traits on all three concepts were rated higher by the experimental group. Apparently, the bilingual training had no discernible anomic effect on the pupils when compared to monolingually trained peers, in spite of the pressures that are generally exerted upon a young bilingual's self-image and upon his perception of his native ethnolinguistic group and the one he seeks to enter.

The similar attendance rates of both groups imply that the bilingual program was not overly demanding or that the interest of the bilingually instructed children and of their parents encouraged a relatively high rate of attendance.

The results of the intelligence measure also lend support to bilingual education. The bilingually instructed children manifested no intellectual confusion or retardation attributable to bilingual instruction, nor was there any indication of intellectual superiority discernible after two years of bilingual training.

The findings concerning intellectual functioning are important for two reasons. First, the belief that bilingualism and intelligence have a negative correlation appeared to be supported by research, for most studies showed that bilinguals, variously defined or described, pay a price for their bilingualism in the form of an intellectual deficit.

The studies seemed to establish that monolinguals do better than bilinguals on intelligence tests. The general conclusion drawn was that the habitual use of two languages was mentally confusing, and the confusion was reflected in measures of intelligence. Evidence resulting from this study contradicts the deficit notion and clearly shows no cognitive lag or retardation in the bilingually instructed pupils.

Second, these findings are of special interest because psychologists are probing the role of language in the intellectual development of children. Bever (1970, p. 352), for instance, asserts that "language and cognition are mutual; one cannot consider one without the other." As reported by John and Horner (1971, p. xxiii), there is a change in emphasis from an additive view of learning to a cognitive view that focuses upon basic processes.

A potential benefit of bilingual instruction for the young learner may be the opportunity it provides him to develop the use of his native language for problem-solving. Having grasped the value of words for memory and thought, he can apply his knowledge to a second language. The acquisition of a second language may facilitate a beneficial transfer effect from one language to another and result in greater intellectual functioning.

When can bilinguals be expected to manifest greater cognitive functioning than monolinguals? Kittell (1936-64,

p. 82) conducted an empirical study and concluded that at some stage in the life of a young bilingual, his bilingual environment is a handicap. However, the young bilingual's environment has the potential for transforming itself into an asset later in life. In the Kittell study, the superiority of bilinguals in intelligence and reading ability was not apparent until they reached the intermediate grades.

The analysis of the seven themes of the Home Educational Environment index leads to the observation that pupils who scored high in Spanish oral skills achievement have parents of relatively low educational levels. The negative correlation of parents' education with proficiency in Spanish and the positive correlation of parents' education with proficiency in English suggest that the more educationally advanced parents in this sample inclined toward the development of oral English in their children, whereas the less educationally advanced parents tended to develop oral Spanish in their children. This conclusion is further strengthened by the correlations between the predictor variable parents' occupation (theme 6) and achievement on three language measures. Parents' occupation, like parents' education (theme 7), correlates positively with English listening comprehension and negatively with Spanish listening and speaking achievement. A third line of evidence that supports this point are the positive correlations between quality of linguistic environment (theme 2) and English listening and speaking ability,

and the negative correlation between this predictor variable and Spanish speaking proficiency.

In summary, the bilingually instructed pupils appear to understand and speak both English and Spanish as well as their monolingually instructed peers. While their ability in mathematics is not equal to that of the control group, neither group was on grade level at the end of first grade. The bilingually instructed pupils have highly favorable self-concepts; their equally favorable view of both culture groups indicates that they are developing a relatively democratic and positive attitude toward both major ethnolinguistic groups represented in the community. And finally, their intellectual functioning is developing normally, with no signs of a deficit related to bilingual instruction.

Summary

The evidence provided by analyses of data concerning one group of bilingually instructed pupils and one group of monolingually instructed pupils, both at the end of first grade, supports, for the sample studies, the following observations.

Hypothesis 1. The hypothesis that bilingually instructed children will achieve equal English language proficiency in listening and speaking skills when compared to a control group of monolingually instructed counterparts was accepted.

Hypothesis 2. The hypothesis that bilingually instructed children will achieve equal Spanish proficiency in listening and speaking skills when compared to a control group of monolingually instructed counterparts was accepted.

Hypothesis 3. The hypothesis that bilingually instructed children will achieve equal cognitive growth when compared to a control group of monolingually instructed counterparts was accepted.

Hypothesis 4. The hypothesis that bilingually instructed children will achieve mastery in mathematics in English equal to that of a control group of monolingually instructed counterparts was rejected.

Hypothesis 5. The hypothesis that bilingually instructed children will not manifest a less favorable attitude toward self or toward either ethnolinguistic group than their monolingually instructed counterparts was accepted.

Hypothesis 6. The hypothesis that bilingually instructed children will have attendance rates equal to that of their monolingually instructed counterparts was accepted.

The findings outlined above should be interpreted with caution, since they derive from an ongoing demonstration program that has been in operation for only two years. Nevertheless, it is hoped that they serve to throw some light on the complex of effects of bilingual education on primary school children within the framework of the public school system of the United States.

Recommendations

As proposed in Chapter I, the scope of this evaluation was limited to certain features of the bilingual education program. It is recommended that the scope of future evaluations be broadened to assess performance in more subject areas in both English and in Spanish. An effort in this direction may serve to increase the potential for detecting and identifying patterns of linguistic and academic development of young learners who are progressing toward balanced bilingualism.

The approach to second language learning in the experimental class is different from that of the ordinary second or foreign language class. In the bilingual class both languages, each of which is a second language to some of the pupils, are used as means of communication for instructional and general communicative purposes. Each of the languages appears to be learned in a manner similar to that of first language learning. This characterization of second language learning prompts questions for further study:

1. What are the developmental stages of language learning in bilingual classes?

2. What language learning strategies do children in bilingual classes employ?

3. What applications of second language learning in bilingual classes can be made to instruction in a second language qua language?

4. Given the various levels of the children's linguistic development in their second language, which concepts are most effectively learned in a large group, in a small group, in individual settings?

5. When and in which language should a pupil in a bilingual program learn to read?

Another important area in the evaluation of bilingual education programs is the measured performance of bilinguals in their assumed biculturalism, those factors that extend beyond the sustained use of two languages. While students of bilingualism appear to be aware of bicultural aspects, there is a need to isolate the bicultural areas of each language system, identify their distinctive elements, and make them measureable. As we assess the degree of bilingualism, we must also assess the degree of biculturalism achieved by those in a program whose goal is to prepare them to function in two different cultures.

Finally, given the importance of the relationship between bilingualism and intelligence and the suggestion that a bilingual might reveal an intellectual advantage in the intermediate grades, it is recommended that intellectual functioning of bilingually trained pupils be assessed on a long-term basis in order to identify trends that may clarify the issue of the intellectual development of bilingually trained students vis-à-vis their monolingually instructed peers.

APPENDIX A

English Listening Comprehension Test
For End of First Grade or Beginning of
Second Grade; Instructions and test
are tape recorded in English.

Squeaky the Rabbit

Entire class listens to the following story narrated on tape, first in its entirety and then in two parts. After each part, several questions are asked; the children respond by drawing a circle around Yes or No on an answer sheet. After the first part, two examples, taken from the story, are given. The story and all instructions are given in English.

Squeaky was a rabbit who lived in Farmer Brown's cornfield. He liked to run and watch the yellow butterflies. One summer day Squeaky saw the farmer's son come into the big field. Squeaky watched the boy cut the corn. "Oh my," cried Squeaky, "what shall I do?" "The farmer's son will step on my house. Then where will I live?" (First half of story)

Poor Squeaky was afraid as the boy came nearer and nearer. At last the boy passed by Squeaky. The corn was all cut and his house was safe. Squeaky was a happy little rabbit once more. He ran and played in the cornfield. And he watched the yellow butterflies again.

Questions:	2 examples	
Number 1:	Was Squeaky a happy rabbit?	Yes or No
Number 2:	Did he live in a zoo?	Yes or No
Number 3:	Did Squeaky like to run in the cornfield?	Yes or No
Number 4:	Did Squeaky like to watch the butterflies?	Yes or No
Number 5:	Did the farmer's son come to watch the butterflies?	Yes or No
Number 6:	Did Squeaky watch the boy cut the corn?	Yes or No
Number 7:	Was Squeaky happy that he would lose his house?	Yes or No

(End of questions for first part)

1148

Number 8:	Were there butterflies in the cornfield?	Yes or No
Number 9:	Did Farmer Brown cut the corn?	Yes or No
Number 10:	Did the boy step on Squeaky's house?	Yes or No
Number 11:	After the corn was cut, was Squeaky happy once more?	Yes or No
Number 12:	After the corn was cut, was Squeaky's house safe?	Yes or No
Number 13:	Are some butterflies yellow?	Yes or No

Answer Sheet for English Story Listening Comprehension

Squeaky the Rabbit

Number _____ Date _____

1. Yes	No
2. Yes	No
3. Yes	No
4. Yes	No
5. Yes	No
6. Yes	No
7. Yes	No
8. Yes	No
9. Yes	No
10. Yes	No
11. Yes	No
12. Yes	No
13. Yes	No

1150

APPENDIX B

Spanish Listening Comprehension Test
For End of First Grade or Beginning of
Second Grade; Test is tape recorded.

Imán y el queso

Entire class listens to the following story narrated on tape, first in its entirety and then in two parts. After each part, five questions are asked; the children respond by drawing a circle around Sí or No on answer sheets. Two examples, taken from the story, are given. The story and all instructions are given in Spanish. Total: 10 questions.

Imán era un ratón muy listo. Un día salió de su agujero. Entró en la cocina de una casa. Encontró un buen pedazo de queso. Se puso a comer.

De repente llegó otro ratón con sus hijitos. Tenían mucha hambre. Querían quitar el queso a Imán. Imán y el otro ratón grande se pusieron a pelear. Pero de pronto se oyó una voz: "¡Miau, miau, miau!" Los dos ratones temblaron de miedo. (First half of story)

--Vamos a correr--dijo Imán.
--Sí corramos--dijo el otro. Estamos perdidos. Viene el gato.

El gato, despacito, iba a cazarlos. Todos los ratones huyeron. Dejaron en la cocina el queso. Y se metieron es su escondite.

El gato no pudo coger a los ratones, pero se comió el queso y se lo comió con gusto.

Y colorín, colorado, este cuento se ha acabado.

Preguntas: 2 ejemplos

Número 1: ¿Era Imán un ratón muy tonto? Sí o No?

Numero 2: ¿Entró Imán en la cocina? Sí o No?

Número 3: ¿Comía Imán un trozo de carne? Sí o No?

Número 4: ¿Llegó otro ratón con sus hijitos? Sí o No?

Número 5: ¿Quería un ratón quitar el queso a Imán? Sí o No?

Número 6: ¿Se pusieron los ratones a pelear? Sí o No?

Spanish Listening Comprehension Test (cont'd)

Número 7:	¿Se oyó una voz que decía "Guau, guau?"	Sí o No?
Número 8:	¿Temblaban de miedo los ratones?	Sí o No?
Número 9:	¿Iba el gato a cazar a los ratones?	Sí o No?
Número 10:	¿Se llevaron los ratones el queso?	Sí o No?
Número 11:	¿Cogió el gato a los ratones?	Sí o No?
Número 12:	¿Comió el gato el queso?	Sí o No?

Answer Sheet for Spanish Story Listening Comprehension

Imán y el Queso

Number _____ Date _____

1. Sí	No
2. Sí	No
3. Sí	No
4. Sí	No
5. Sí	No
6. Sí	No
7. Sí	No
8. Sí	No
9. Sí	No
10. Sí	No
11. Sí	No
12. Sí	No

APPENDIX C

Date _____ No. _____.

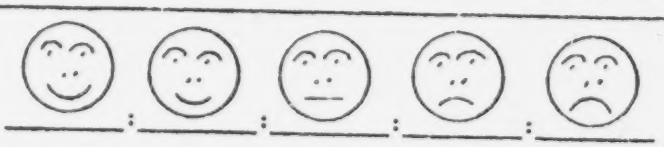
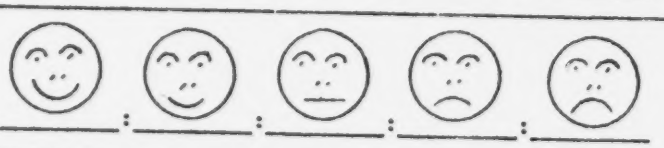
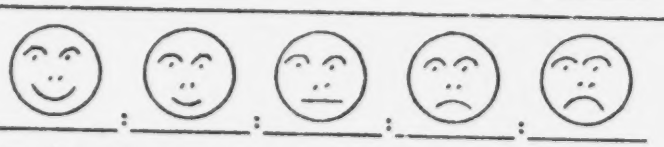
MEXICAN-AMERICANS

1.	nice (simpático)		awful (malo)
2.	handsome (guapo)		ugly (feo)
3.	happy (contento)		sad (triste)
4.	clean (limpio)		dirty (sucio)
5.	rich (rico)		poor (pobre)
6.	kind (bondadoso)		cruel (cruel)
7.	fair (justo)		unfair (injusto)
8.	healthy (sano)		sick (enfermo)

2154

Date _____ No. _____

ME

1. nice (simpático)		Awful (malo)
2. handsome (guapo)		ugly (feo)
3. happy (contento)		sad (triste)
4. clean (limpio)		dirty (sucio)
5. rich (rico)		poor (pobre)
6. kind (bondadoso)		cruel (cruel)
7. fair (justo)		unfair (injusto)
8. healthy (sano)		sick (enfermo)

Date _____ No. _____

ANGLO-AMERICANS

1.	nice (simpático)	awful (malo)
2.	handsome (guapo)	ugly (feo)
3.	happy (contento)	sad (triste)
4.	clean (limpio)	dirty (sucio)
5.	rich (rico)	poor (pobre)
6.	kind (bondadoso)	cruel (cruel)
7.	fair (justo)	unfair (injusto)
8.	healthy (sano)	sick (enfermo)

156

APPENDIX D

INTERVIEW: HOME EDUCATIONAL ENVIRONMENT

Number _____

INSTRUCTIONS TO INTERVIEWER: Be sure to secure a list of all the parents to be interviewed, their addresses and phone numbers. As you complete the interview, check (✓) the name of the person interviewed, and write the assigned code number on this INTERVIEW SHEET.

Convey to the interviewee the following statement of purpose: We are studying the differences in the home backgrounds of some first-grade children to get an estimate of the different home situations in this city. We're doing this so that the schools will take this kind of information into account in planning education programs.

Guaranty: anonymity of parents.

Request: Because it is necessary to have accurate answers, pass a question if you feel that it invades your privacy. We would rather have no response than an inaccurate one. There are no RIGHT or WRONG answers to any of the questions.

1. Father's Education: What is the highest level he completed? (Encircle the number indicating level.)

   7 Professional or Graduate School
   6 College; 1 to 4 years
   5 High School Graduate
   4 1-3 years of High School
   3 Grammar School Graduate; finished 8th grade
   2 4-7 years of school
   1 None to 3 years of school

2. Mother's Education: What is the highest level she completed?

   7 Professional or Graduate School
   6 College; 1 to 4 years
   5 High School Graduate
   4 1-3 years of High School
   3 Grammar School Graduate; finished 8th grade
   2 4-7 years of school
   1 None to 3 years of school

3. Father's or guardian's occupation? Interviewer: describe exactly. If job description is vague, probe by asking, "What does he do?" and write the response. If family is on welfare, write it down.

1157

INTERVIEW: HOME EDUCATIONAL ENVIRONMENT (cont'd)

4. Mother's occupation?

****

1a Emphasis on education

How much schooling do you want your child to receive? Rating _____
How much schooling do you expect your child to receive?
How much schooling must your child receive?
What kind of job do you want your child to have when he (she) grows up?
What grades do you expect your child to get in school? (As, Bs, Cs, etc.)

1b Emphasis on education

Did your child attend nursery school, Headstart or other pre-school program? Rating _____
Before child started school, did you:
Teach him to count? To 10, 20, 30, 40, 50, 100? (Encircle)
Teach him to name colors? How many?
Teach him to print?
Did you meet your child's kindergarten teacher?
Do you regularly ask your child about his progress in school?
Do you and/or your husband regularly attend meetings of PTA or other school activities? Which?

2a Quality of linguistic environment

Do you have a dictionary at home? Rating _____
Did you ever read to your child? Since when?
Do you still read to him? How often?
Do you correct his speech when he makes mistakes?
Does he read anything to you?
Does he have a library card? How frequently does he use the card?
Does your child ask you what words mean? Do you explain?

2b Quality of linguistic environment

Do you subscribe regularly to magazines? Which ones? Rating _____

Do you subscribe regularly to newspapers? Which ones?

Do you ever discuss with your child articles in the newspaper, magazine or other publications?

How frequently?

2158

INTERVIEW: HOME EDUCATIONAL ENVIRONMENT (cont'd)

3 Home guidance and facilities for school learning

Do you have an encyclopedia at home? Rating _____
Does child take lessons in music, dance, other?
Do you have an almanac or fact book at home?
Does child have any workbooks at home?
Does child have a desk of his own? If no, where does he study?
What supplies does the child have: pencils, pens, paper, ruler, crayons, paints, scissors, paste? (Encircle items in home and add any other supplies not listed.)

Do you help your child with his school work?
How often?

4 Enrichment of home environment

What kinds of toys, games, books, pamphlets, etc., have you bought for your child in the last two years, including birthdays and holidays? Rating _____
Examples?
What are your child's hobbies?
How long has the child been at them?
How did he begin his hobbies?

5 Educational facilities

How many hours a week of TV does your child watch? Rating _____
Do you approve of the programs?
Do you discuss the programs with him? How often?
Do you recommend programs to your child?
What are your favorite TV programs?
Does your child listen to the radio? How many hours?

1159

RATING SCALE

RATINGS:

1. Emphasis on education _____
2. Quality linguistic environment _____
3. Home Guidance & facilities _____
4. Enrichment Home environment _____
5. Educational facilities _____

RATINGS:

1. Father's education _____
2. Mother's education _____

Average _____

1. Father's occupation _____
2. Mother's occupation _____

Average _____

1a RATING SCALE:

9 Beyond 4 years of college. Occupational expectation requires very high education. Expectation of best grades in school.

8
7 Four years of college. Occupational expectation requiring high education. Expectation of A's with some B's.

6
5 At least through high school. Some college education desired. Moderately high occupational aspiration. Expectation of B's with some A's and some C's.

4
3 Only up to high school. Very moderate and uncertain occupational expectation. Expected grades C's with some B's.

2
1 Absence of any long-term educational and vocational goals. Only narrow and immediate goals. No expectations about grades, or expectation below C's.

1b RATING SCALE:

9 Parents show keen interest in providing abundant opportunity for child to succeed in school. Child mastered all above skills and full pre-school program. Parents regularly consulted teachers. Very high interest in school progress. Very active in school affairs.

8
7 Parents taught child more than half of the skills and child attended pre-school program. Parents met kindergarten teacher. High interest in school progress. Active in school activities.

6
5 Parents taught child about half of the skills. Child did not attend pre-school program. Parents met kindergarten teacher. Some interest in school progress. Occasional attendance at school activities.

4
3 Parents taught child less than half of skills and only occasionally. Did not attend pre-school program. Little interest in school progress. Attended only 1 school meeting.

2
1 Parents taught practically no skills. Child not in pre-school program. Parents have not met kindergarten teacher. Little or no interest in child's school progress. No attendance at school activities.

2a RATING SCALE:

9 Read to child regularly, almost every day, from early childhood. Reading still continues. A variety of efforts made to increase vocabulary and improve usage.

8
7 Read to child regularly for about 3 years until he began to read. Some occasional reading continues. Variety of efforts made to increase vocabulary and usage.

6
5 Read to child 2-3 times a week for about 2 years or so. Some effort to improve vocabulary and language usage.

1161

4
3 Read to child during pre-school occasionally and irregularly. Only incidental efforts to improve vocabulary and usage.

2
1 Not read to child regularly at any time. Hardly any efforts to improve vocabulary and usage.

2b RATING SCALE:

9 Extensive reading of a variety of material by family members. Great encouragement to child for the same from his early age--even before learning to read.

8
7 Fairly extensive reading of a good variety of material by family members. Encouragement to the child for the same.

6
5 Moderate reading of some variety of material by family members. Some encouragement to child to use reading facilities -- only lately.

4
3 Some infrequent reading gone by members of the family. Only occasional encouragement to child to make use of reading material.

2
1 Hardly any reading done by members of family. No encouragement to child to make use of reading materials.

3 RATING SCALE

9 Selection of most apprapriate materials according to educational level of child. Abundant supply of educational material. Appropriate and timely guidance for use of materials and facilities.

8
7 Selection of generally appropiate material for child's level. Fairly abundant supply of educational material. Appropriate and timely guidance for use of materials and facilities.

6
5 Availability of some educational material. Specific selection for child's level only in some cases. Some general guidance for use.

4
3 Very moderate supply of educational material. No specific selection according to child's level. Only occasional guidance for use of materials and facilities.

2
1 No availability of educational material in the home. No use of facilities available in the community, such as library.

4 RATING SCALE:

9 A large variety of thought-provoking & educational toys, games, etc. provided since early childhood. Great encouragement for development of educationally-oriented hobbies.

8
7 A fairly good variety of thought-provoking & educational toys, games, etc. provided since early child hood. Some encouragement for development of educational hobbies.

6
5 Some thought-provoking & educational toys, games, etc. available. No educational hobbies.

4
3 Only a few thought-provoking & educational toys, games, etc. No educational hobbies.

2
1 Hardly any thought-provoking & educational toys, games, etc. No educational hobbies.

5 RATING SCALES:

9 Regular use for specifically educational purposes. Recreational value subsidiary. Frequent follow-up discussions.

8
7 Regular use for general educational & recreational purposes. Sometimes follow-up discussions.

6
5 Fairly regular use. Recreational purpose more predominant. Occasional follow-up discussions.

4
3 Not much use of TV and other media. Mostly recreational, Hardly any follow-up discussions.

2
1 No use of any of these media.

APPENDIX E

LANGUAGE USAGE ESTIMATE

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Name of Subject _____ Age _____ Date _____

Address _____ Telephone No. _____

SCORE BOX

		Sp.	Eng
LISTENING:	Total Part 1A	___	___
	Total Part 1B (M)	___	___
	Total Part 1B (F)	___	___
	Total Listening	___	___
SPEAKING:	Part 2		
	Total Speaking	___	___
		TOTAL SP. ___	TOTAL ENG ___
FINAL SCORE:	The difference between TOTAL S AND TOTAL E	___	Judgment ___

LISTENING: Part 1A			Sp.	Eng
1. Mother	⟵	Father	___	___
2. Father	⟶	Mother	___	___
3. Brothers & Sisters	⟷	Brothers & Sisters	___	___
	Total Part 1A		Sp. ___	Eng ___

LISTENING: Part 1B

1. Mother (M) ⟵ Other Children
2. Father (F) ⟶ Other Children

Name (of each child except subject)	Age	Sex	Sp. (M)	Eng (M)	Sp. (F)	Eng (F)
1. _____	___	___				
2. _____	___	___				

Name	Age	Sex	Sp.	Eng	Sp.	Eng
3. _____	___	___	(M)	(M)	(F)	(F)
4. _____	___	___	(M)	(M)	(F)	(F)
5. _____	___	___	(M)	(M)	(F)	(F)
6. _____	___	___	(M)	(M)	(F)	(F)
7. _____	___	___	(M)	(M)	(F)	(F)
8. _____	___	___	(M)	(M)	(F)	(F)
9. _____	___	___	(M)	(M)	(F)	(F)
10. _____	___	___	(M)	(M)	(F)	(F)

Total Part 1B (M) Sp.___ Eng___

Total Part 1B (F) Sp.___ Eng___

SPEAKING: Part 2		Sp.	Eng
1.	Child ——→ Mother	___	___
2.	Child ——→ Father	___	___
3.	Child ——→ Brothers & Sisters	___	___
4.	Child ——→ Cousins	___	___
5.	Child ——→ Playmates other than brothers & sisters	___	___
6.	Child ——→ Grandmothers	___	___
7.	Child ——→ Grandfathers	___	___
8.	Child ——→ Aunts	___	___
9.	Child ——→ Uncles	___	___
10.	Child ——→ Babysitter (if other than any of above)	___	___

Total Part 2 Sp.___Eng___

Instructions for: LANGUAGE USAGE ESTIMATE

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This interview schedule was developed to measure language usage in the home-family domain of individual subjects and to yield, among other data, a single score that classifies the subject as: English monolingual, English dominant, Apparent bilingual, Spanish dominant or Spanish monolingual. Interview time: approximately 6 mins.

All LISTENING activities can be interpreted as listening opportunities for the subject--how much of each language the subject hears; likewise, all SPEAKING activities focus on the subject as a speaker--how much of each language the subject speaks.

1. Obtain name, address, age and telephone number from the subject or from institutional records and print the information on the ESTIMATE form.

2. Although the language usage information requested can be obtained by phone, it is strongly urged that the interviewer conduct a face-to-face interview. If the subject is a child, obtain the information from one or both parents.

3. For each combination of speaker-listener, ask which language is spoken most of the time. Write a 2 in the appropriate language column (Spanish or English) for that combination. Then ask if the other language is spoken some of the time. If the answer is yes, write a 1 in the other language column. If the answer is no, write a 0 (zero) in the other language column. If a speaker uses both languages with equal frequency, write a 2 in each language column.

4. The person named to the left of the arrow is the speaker in the conversation; the person named to the right of the arrow is the listener in the conversation: For example:

	Sp(anish)	Eng(lish)
Mother ⟶ Father	2	1

means the Mother speaks Spanish to the Father most of the time and English some of the time.

5. For LISTENING: Part 1B, first ask the names, ages, and sex (M, male; F, female) of all members of the immediate family, except the subject, and list the information. Then, proceed by asking which language the Mother speaks most of the time and which language she speaks some of the time to

each member. Finally, ask the questions with the Father as speaker to each family member.

6. If any family member listed on the ESTIMATE spends less than 1/4 of the year (three months) in the home-family environment of the subject, DO NOT COUNT HIS USAGE. For instance, if a married sister visits the family only once a year, or if the family makes brief and occasional visits to grandparents in Mexico, assign 0s (zeroes) to their language usage.

7. For SPEAKING: Part 2, proceed as before: for each combination of speaker-listener, ask which language is spoken most of the time. Write a 2 in the appropriate language column (Spanish or English) for that combination. Then ask if the other language is spoken some of the time. If the answer is yes, write a 1 in the other language column. If the answer is no, write a 0 (zero) in the other language column. If a speaker uses both languages with equal frequency, write a 2 in each language column.

8. When the interview is over, total each of the parts and transfer the totals to the SCORE BOX. Compute the TOTAL LISTENING and TOTAL SPEAKING. Then, add TOTAL LISTENING and TOTAL SPEAKING to get TOTAL Sp. and TOTAL Eng. The difference between TOTAL Sp. and TOTAL Eng. is the FINAL SCORE.

9. Guidelines for Making a JUDGMENT:

a) If the subject scores a TOTAL of 8 or less for ALL FOUR PARTS in the second language (the language with the lower score), consider him a monolingual in the language with the higher score, and write the symbol (S or E) on the JUDGMENT line.

b) If the subject scores a TOTAL of 9 or more for ALL FOUR PARTS in the second language and if the FINAL SCORE is 9 or higher, consider him an S/e (example: Spanish 45, English 12), or an E/s (example: Spanish 29, English 50).

c) If the subject scores a TOTAL of 9 or more in ALL FOUR PARTS in the second language and if the FINAL SCORE is 8 or less, consider him an E/S.

Symbols	Description
E	English monolingual
E/s	English dominant
E/S	Apparent bilingual
S/e	Spanish dominant
S	Spanish monolingual

10. To determine generational usage trends from SPEAKING: Part 2, combine all the English first and then Spanish scores in the following manner:

1st generations:	Item 3. Brothers & Sisters
	Item 4. Cousins
	Item 5. Playmates other than brothers and sisters
2nd generation:	Item 1. Mother
	Item 2. Father
	Item 8. Aunts
	Item 9. Uncles
3rd generation:	Item 6. Grandmothers
	Item 7. Grandfathers

APPENDIX F

Functional Definition for Identifying Mexican-American Pupils

The following functional definition of a Mexican-American pupil was agreed upon and used by the instructional staff to distinguish Mexican-American from Anglo-American children in the experimental and control classes. The definition is not exhaustive. Other identifying characteristics probably exist. These were chosen because they appear to be salient and because they constitute a brief but operational index.

If the instructional staff observed that a student satisfied two or more of the below criteria, he was classified as a Mexican-American for the purposes of this study:

1. The pupil uses Spanish as a native language.
2. The pupil's English speech is clearly Hispanicized.
3. The pupil's physical appearance suggests that he is of Mexican ancestry.
4. The pupil's patterns of behavior are generally associated with the Mexican or Mexican-American culture.

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CURRICULUM VITAE

Rudolph V. Skoczylas was born in Philadelphia, Pennsylvania, where he received his elementary and secondary education. In 1954 he was graduated with the B.S. Degree in Foreign Service from Georgetown University. Post-graduate studies in various Spanish universities were followed by extensive travel throughout Europe until 1956. In September, 1959 he was employed as a Spanish and English teacher in the Sequoia Union High School District in California. He served as an NDEA Consultant in Elementary-Secondary-Junior College Foreign Language Instruction and as a Foreign Language Consultant for the Modern Language Association of America. In 1964 he was employed as Supervisor of Foreign Language Instruction in the Gilroy Unified School District. In 1965 he was granted the Degree of Master of Language Arts from San Francisco State College. He taught second language pedagogy courses for several colleges and designed a high school bilingual program and an elementary school bilingual program. In August of 1972 he was granted the Doctor of Philosophy Degree from the University of New Mexico.